

MASON

A design for a an Episcopal Cathedral

Architecture

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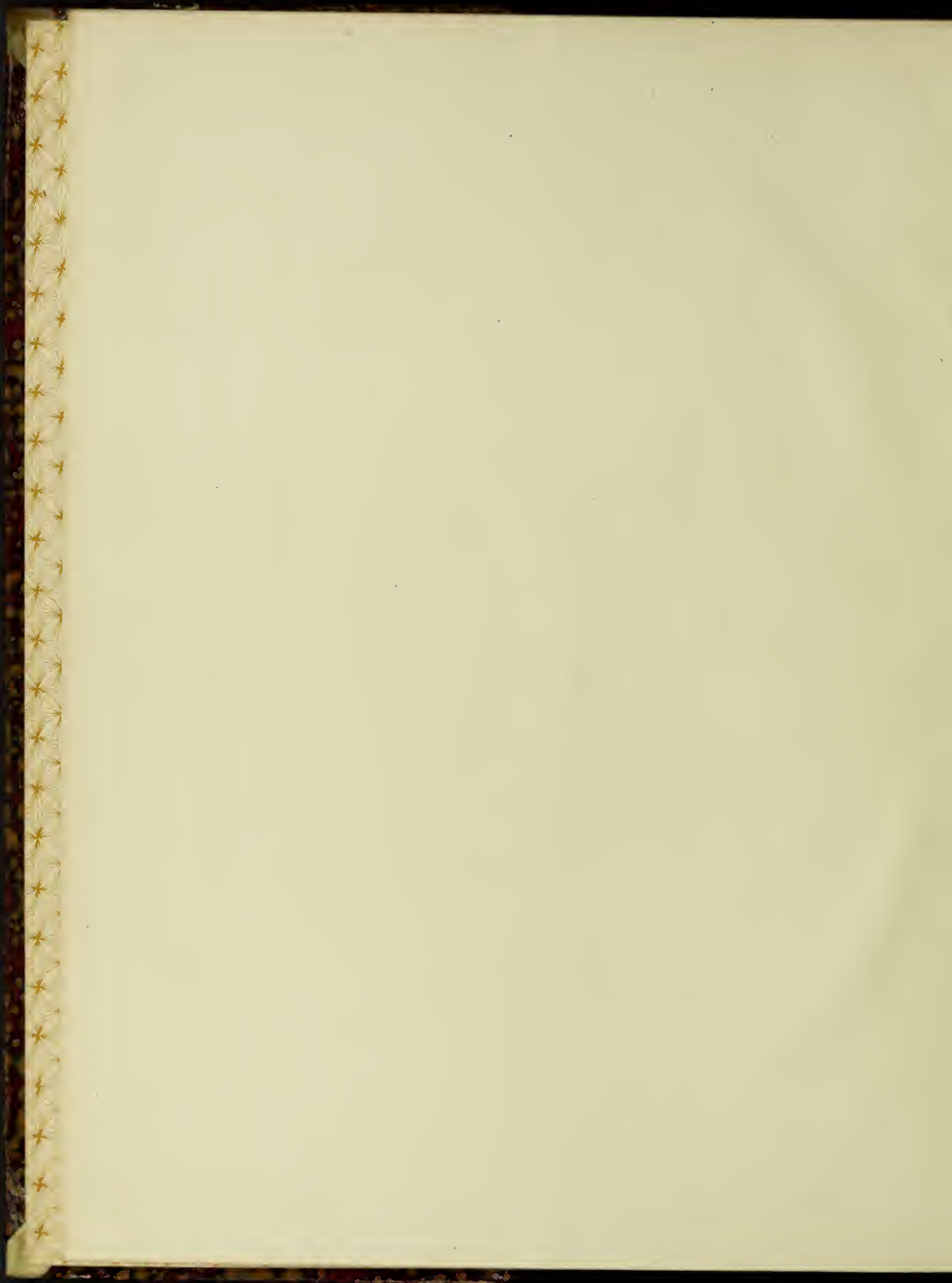
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A DESIGN FOR AN EPISCOPAL CATHEDRAL

BY

ROY SKINNER MASON

THESIS

FOR THE

DEGREE OF BACHELOR OF SCIENCE

IN

ARCHITECTURE

COLLEGE OF ENGINEERING

UNIVERSITY OF ILLINOIS

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THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

ROY SKINNER MASON.

ENTITLED ... A DESIGN FOR AN EPISCOPAL CATHEDRAL.

IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF ... BACHELOR OF SCIENCE IN

ARCHITECTURE.

Cohn Watrous Case.

Instructor in Charge

APPROVED:

N. Clifford Rickard

HEAD OF DEPARTMENT OF

Architecture.

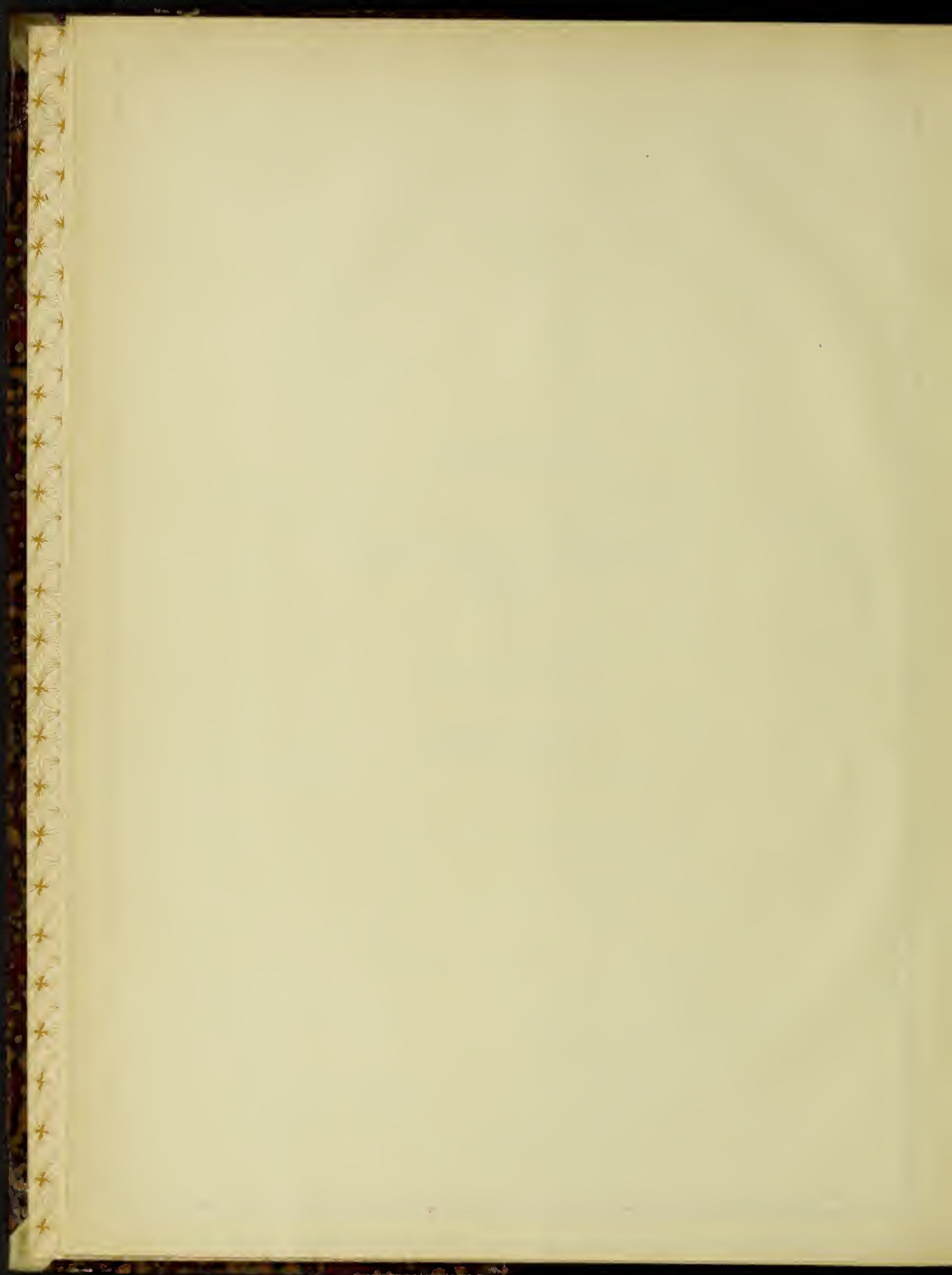
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THESIS SUBJECT.

THE DESIGN FOR AN EPISCOPAL
CATHEDRAL.

Roy S. Mason.



8 INDEX.

Principal dimensions of the principal English Cathedrals.

Bibliography.

Schedule of rooms for an Episcopal Cathedral.

An Episcopal Cathedral. page 1.

The Cathedral idea.

West portals and narthex. page 6.

Nave and side aisles. page 7.

Crossing and transepts. page 8.

Choir. page 8.

Ambulatory. page 9.

Sacristies. page 9.

Lady chapel. page 12.

Chapter house. page 12.

Cloisters. page 12.

Western elevation. page 15.

Side elevation. page 16.

Prints showing the development of the Gothic plan from the
Greek Temple.

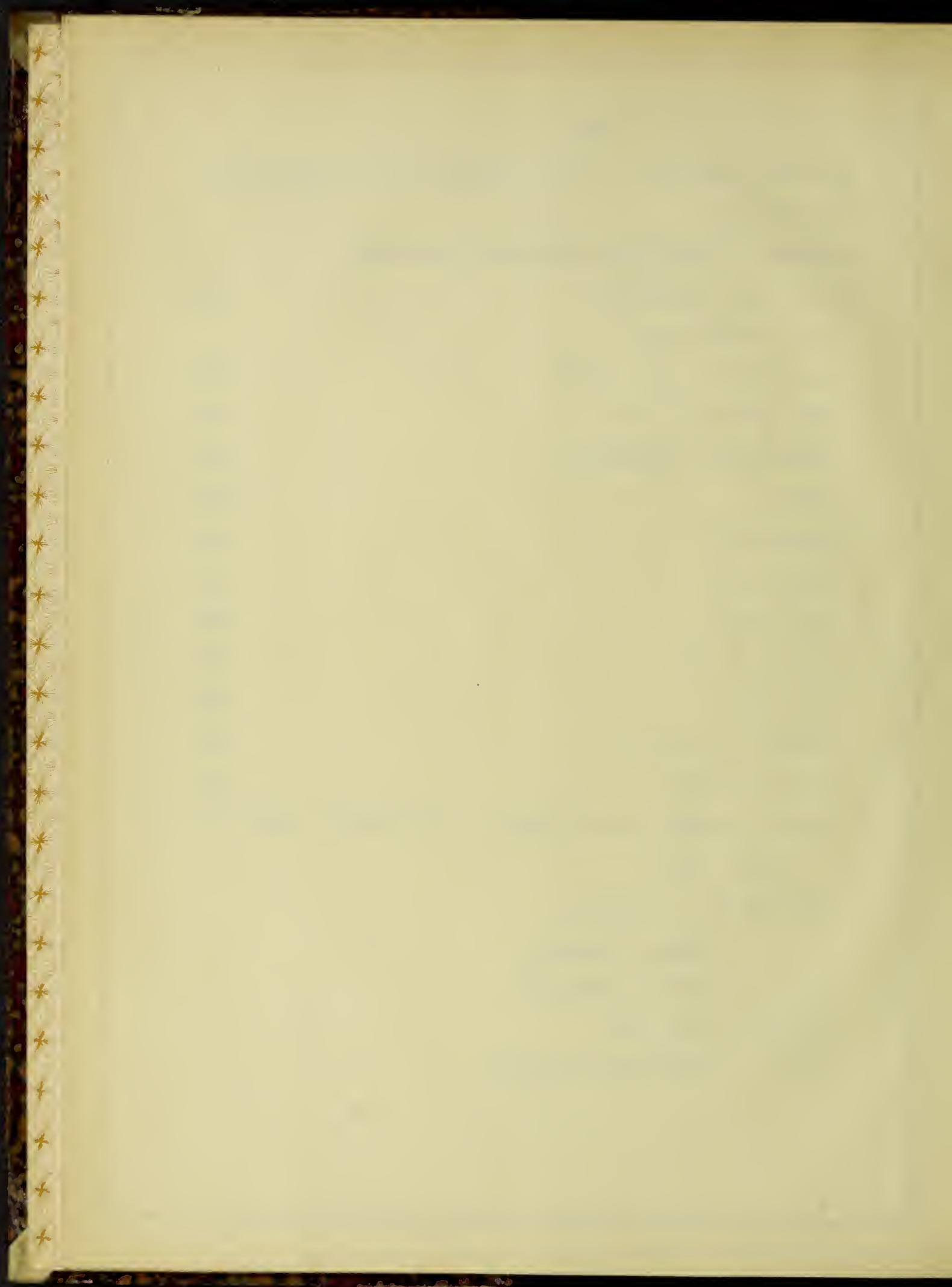
Photographs of drawings.

THESE DRAWINGS.

Sheet 1. Western elevation.

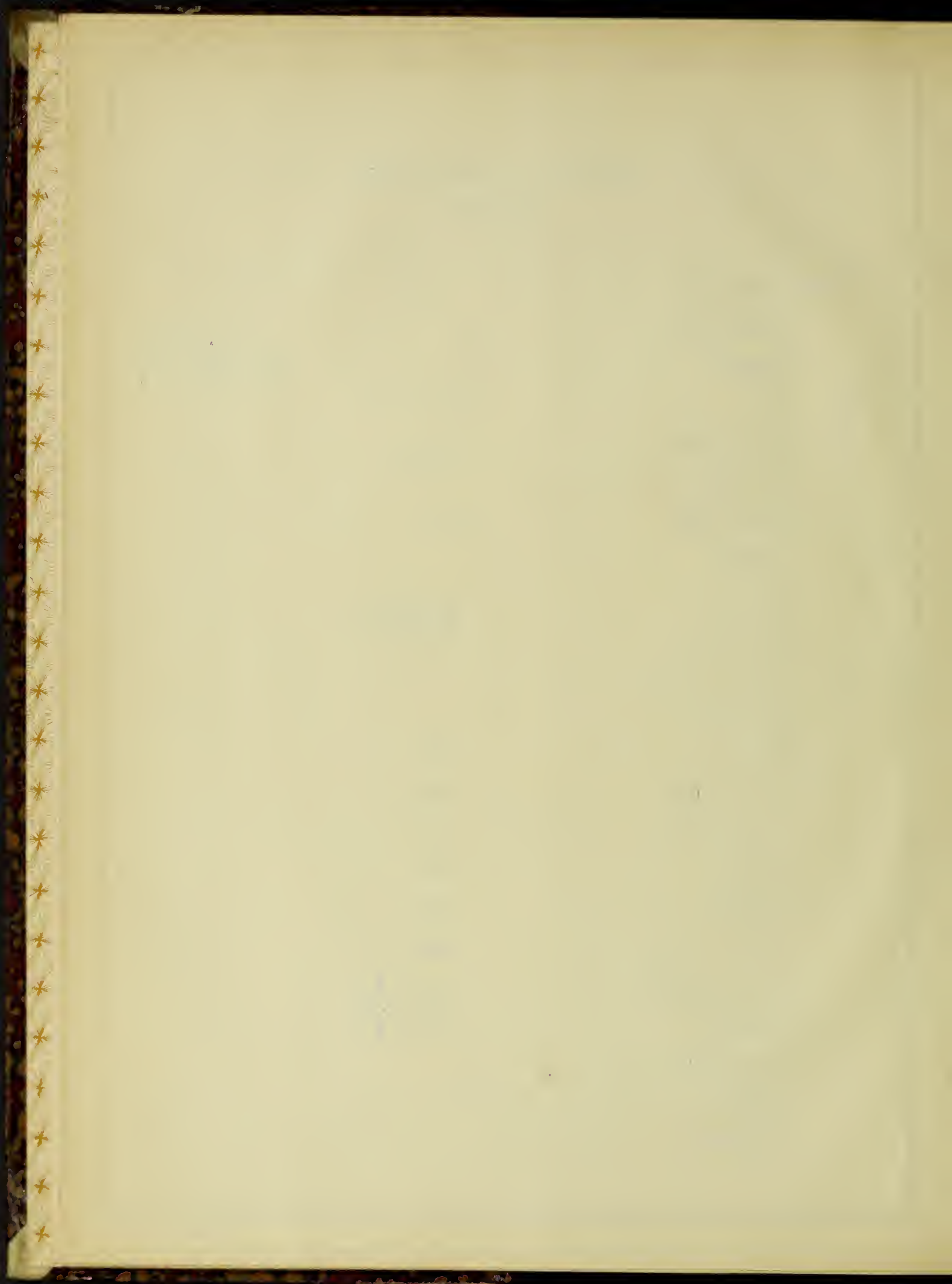
Sheet 2. Floor plan.

Sheet 3. Longitudinal section.



SCHEDULE FOR AN EPISCOPAL
CATHEDRAL.

Required Room.	Size	Note:
West Portal		The first measurement is along the east and west axis.
Narthex		
Nave	191 x 42	
Side Aisles	18 45 x 50	
Transepts		
Baptistry	237	
Chancel		
Choir	79 x 42	
Sanctuary	Seating 90 65 x 42	
Side Chapels		
Sacristies		
Choir	600	
Altar Vault	400	
Organist	400	
Clergy	600	
Bishop	400	
Dean	400	
Chapter House	76' x 29' 5' Diam.	
Chapel	7' x 28'	
Cloisters		
Toilets		
Closets		



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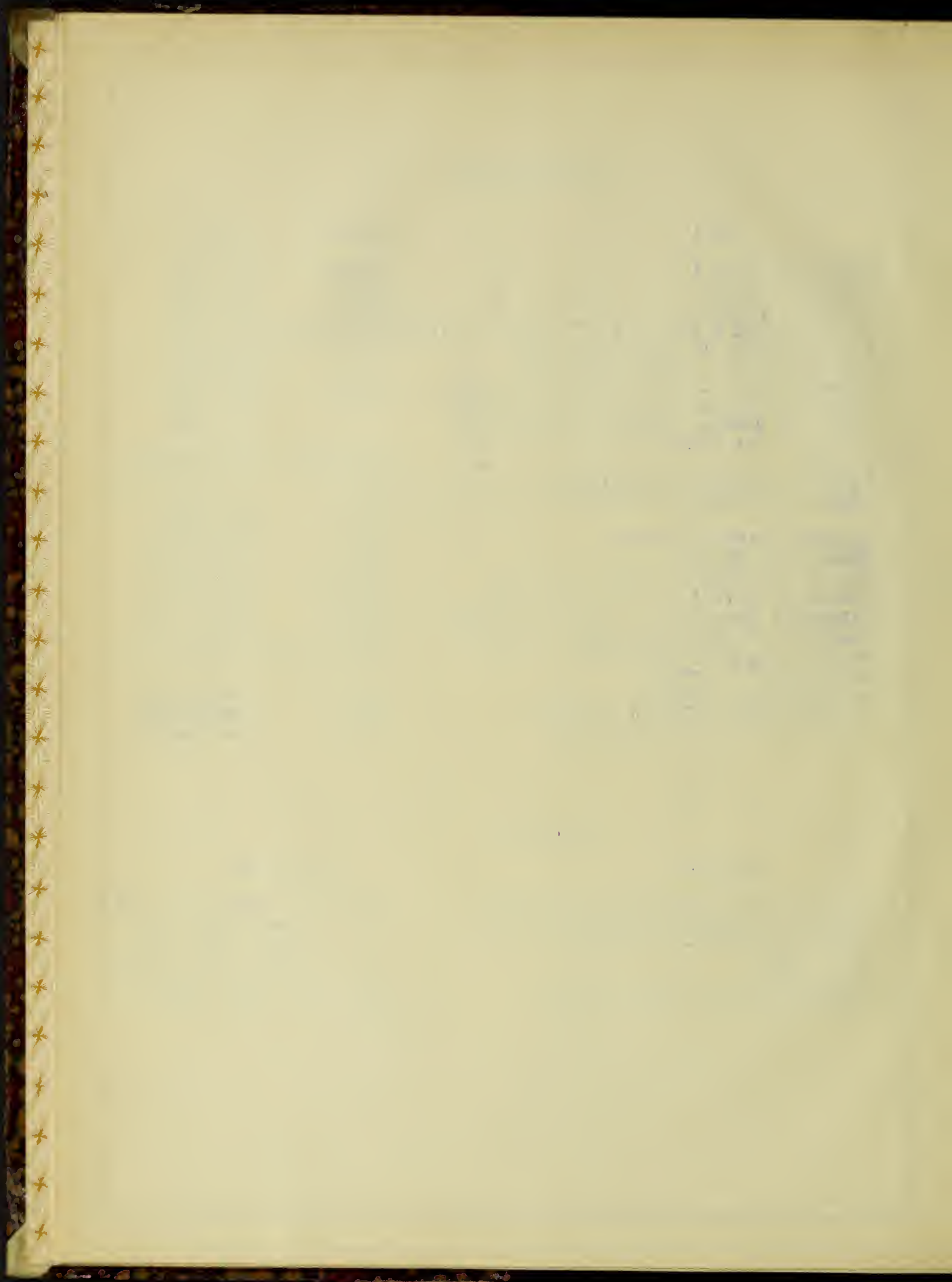
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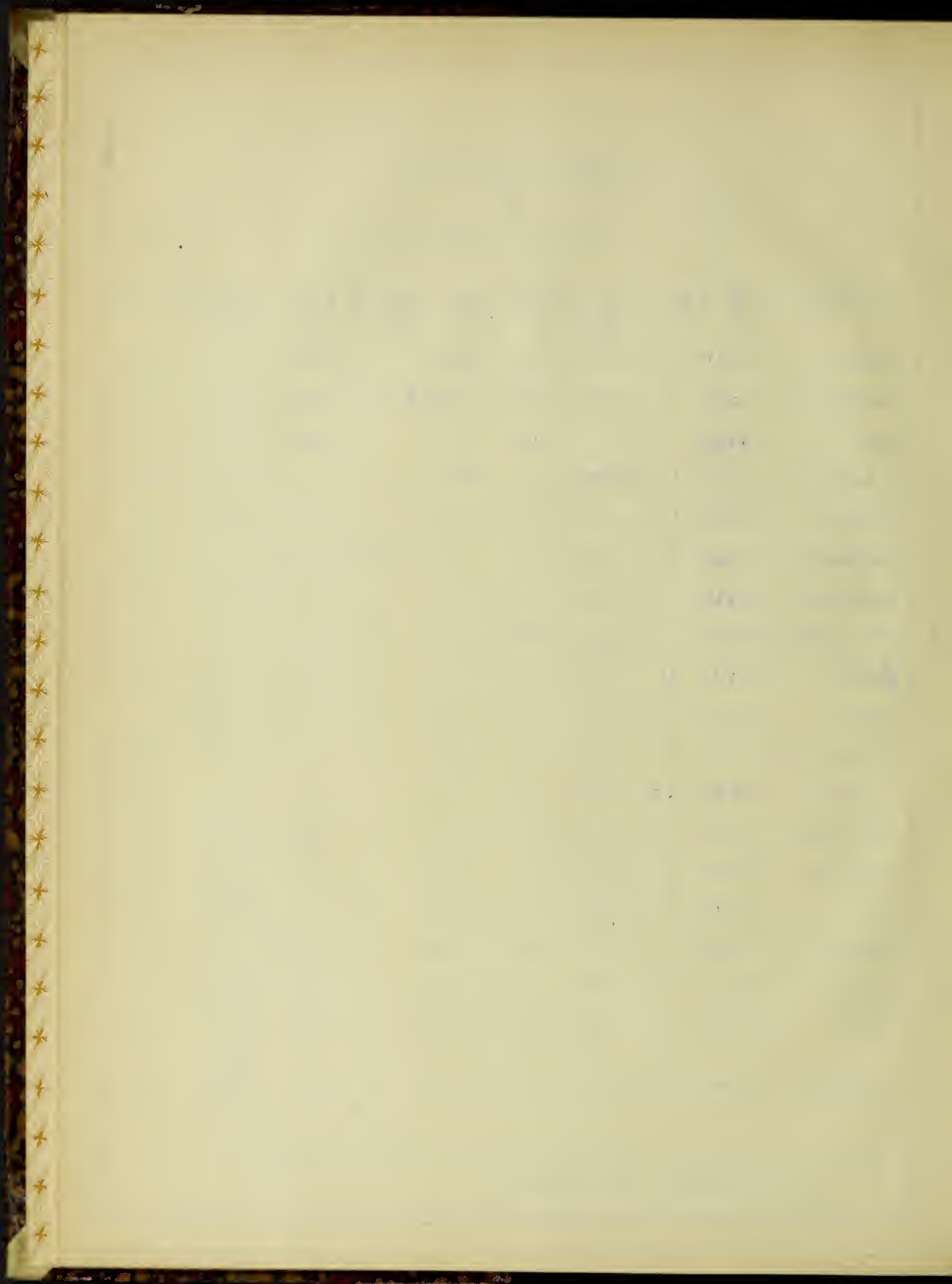
PRINCIPAL DIMENSIONS

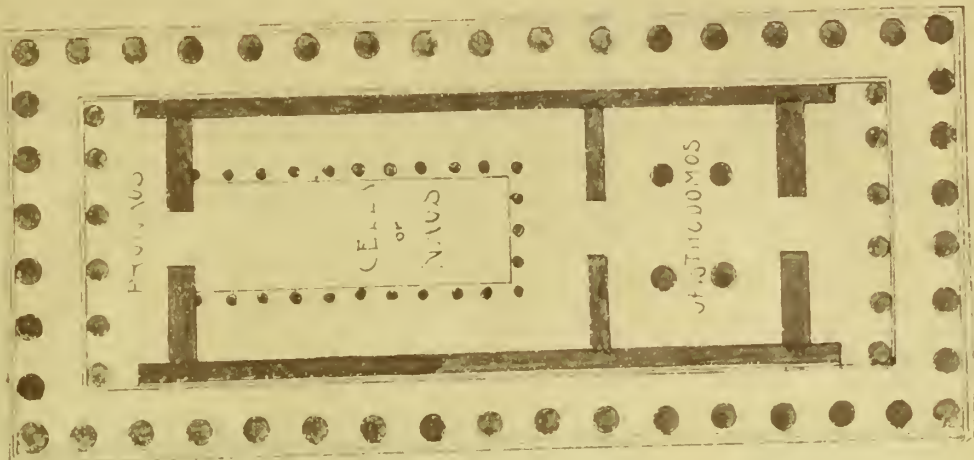
OF

ENGLISH CATHEDRALS.

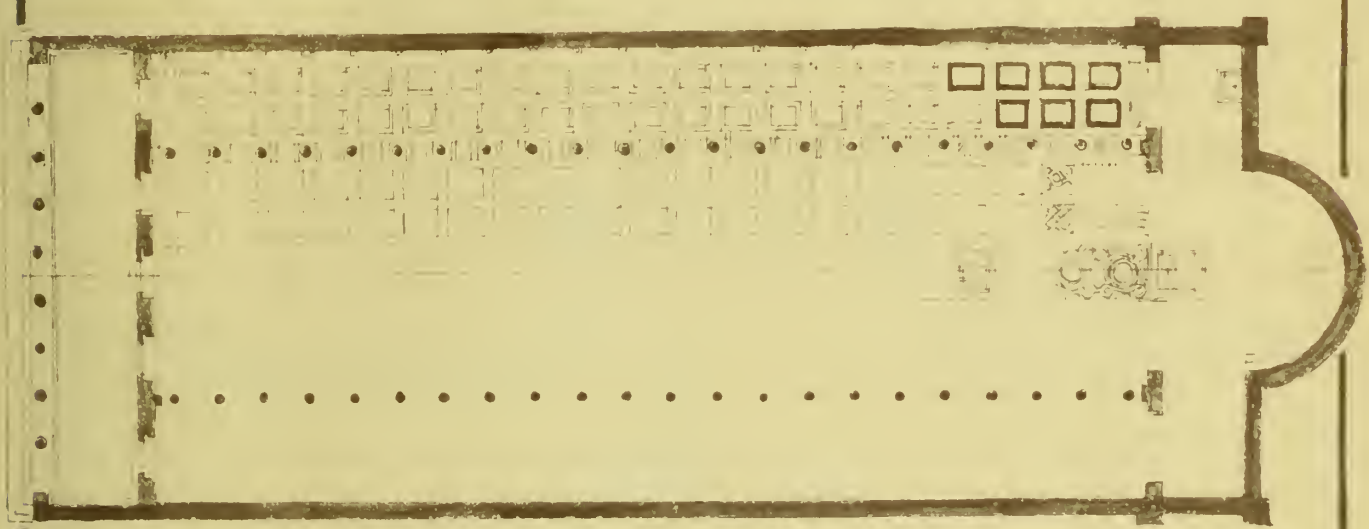
Cathedral	Nave	Aisle	Tran-septs	Choir	Sanc-tuary	Baptis-try	Chap-el	Chapter House	Length
Bristol	122x36	18	36x28	108x36	28x36		50x17		330
Canterbury	176x46	20	38x30	86x46	105x46	226	56x32	92x40	542
Hereford	127x38	18	52x37	53x38	23x38		54x34	40 ^{oc}	360
Litchfield	123x34	17	50x40	55x34	57x34		87x34	40x27	388
Norwich	257x36	19	53x29	108x36	73x36		62x35	78x41	414
Peterborough	234x42	18	61x53	60x42	100x42	19x13	100x35		480
Rochester	115x33	16	31x29	60x29	94x29		75x28	58x17	345
St. Albans	283x38	19	52x32	108x38	64x38		57x24		555
Chester	150x40	18	40x106	80x40	32x40		62x25	50x26	370
Exeter	140x40	20	30x52	70x40	55x40		62x26	57x30	
Gloucester	190x44	22	40x56	75x44	80x44		90x27	72x35	435
Worcester	186x40	22	36x28	52x40	80x40		70	0	420
Salisbury	200x39	19	65x56	105x39	36x39		68x39	62 ^{oc}	475
Lincoln	180x46	19	42x66	88x46	70x46		74x46	60 ^{oc}	508
York	215x54	26	Aisles	92x45	70x45		64	54	64 ^{oc}
Winchester	270x45	22	Aisles	82x45	56x45		125x38	90x40	530
Durham	208x42	24	44x70	52x42	68x42		45x134	68x36	500
Wells	162x38	18	40x50	90x38	30x38		70x38	54 ^{oc}	430
Averages	191x42	18	45x50	79x45	65x38		69x46	56 ^{oc} 70 ^c 74x32	509

Note:- All lengths along east and west axis given first.
^{oc}- Octagonal. ^c- circular.

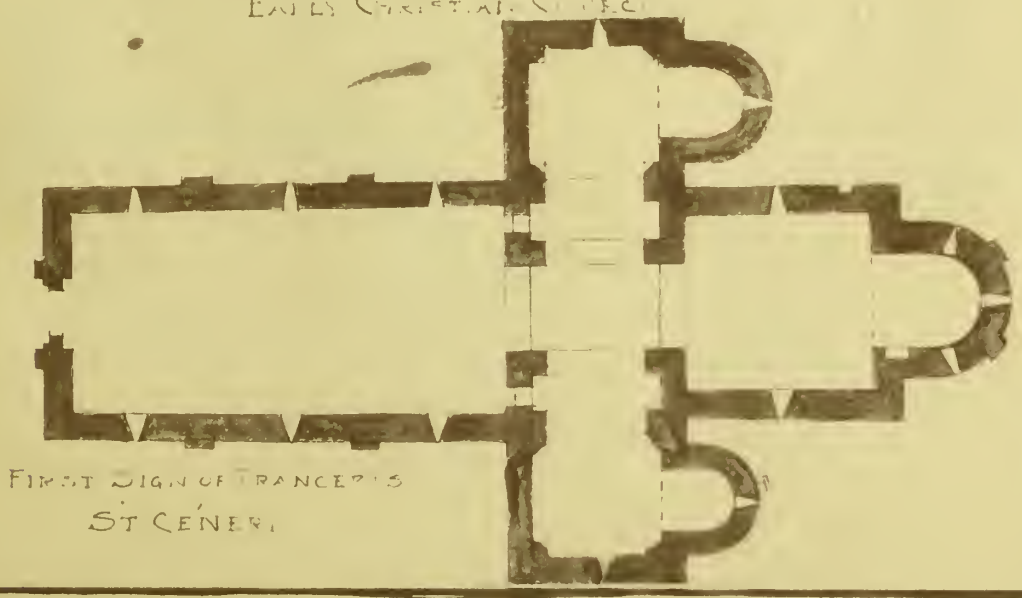




THE GREEK TEMPLE

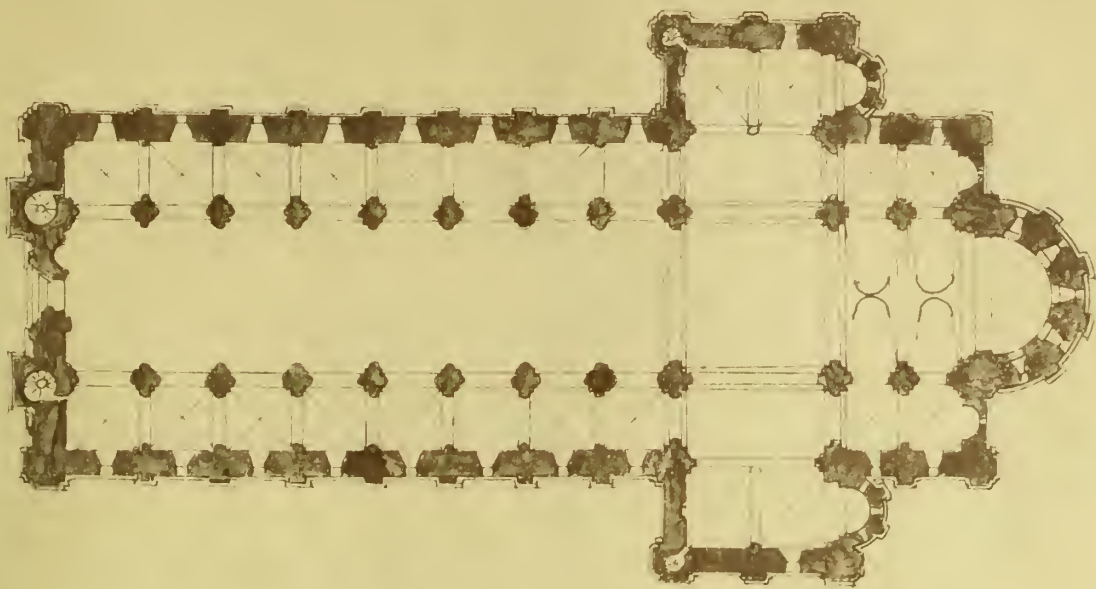


SAINT MARC IN VENICE
EARLY CHRISTIAN CHURCH

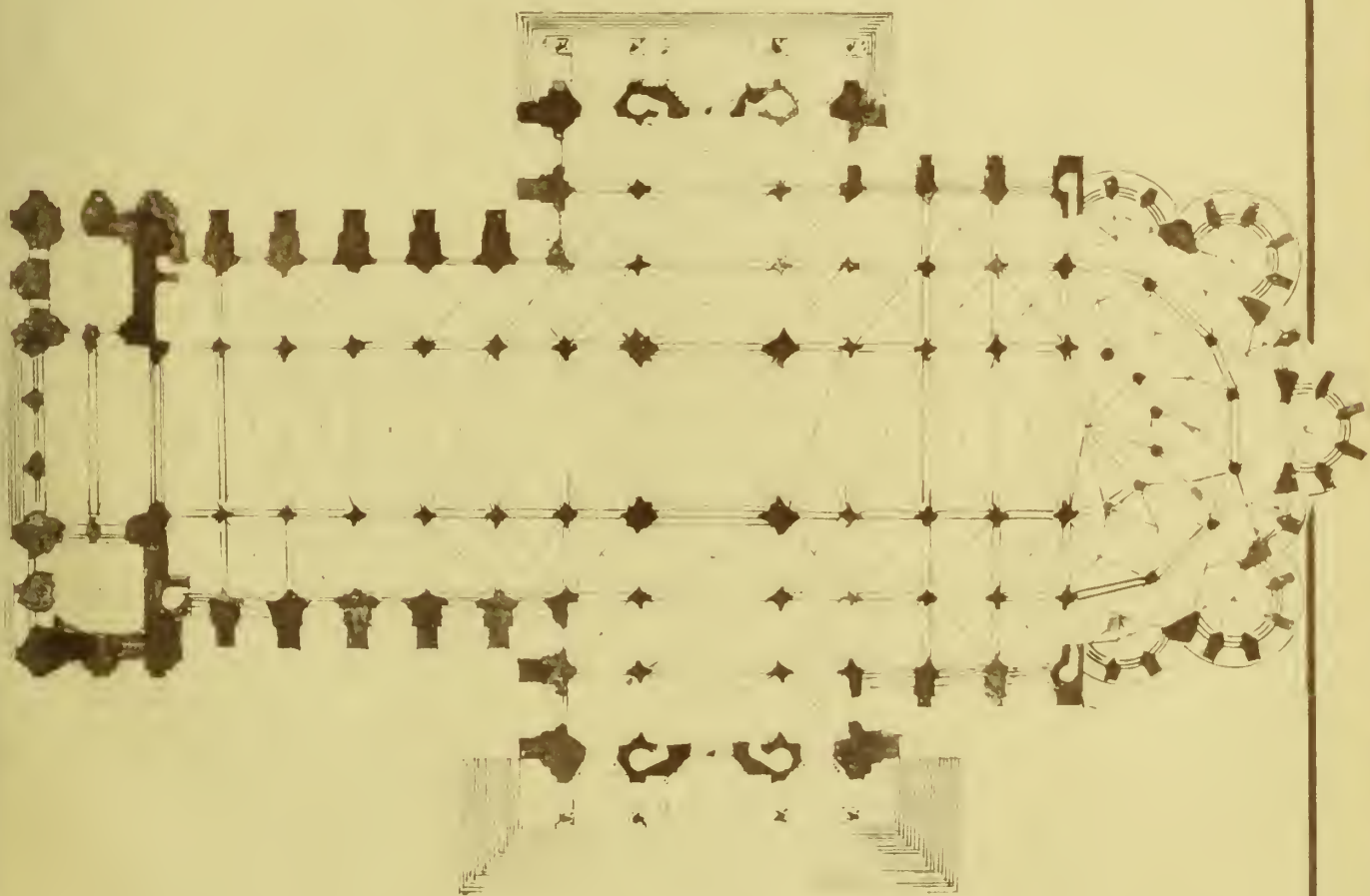


FIRST SIGN OF TRANSEPT
ST CENERI

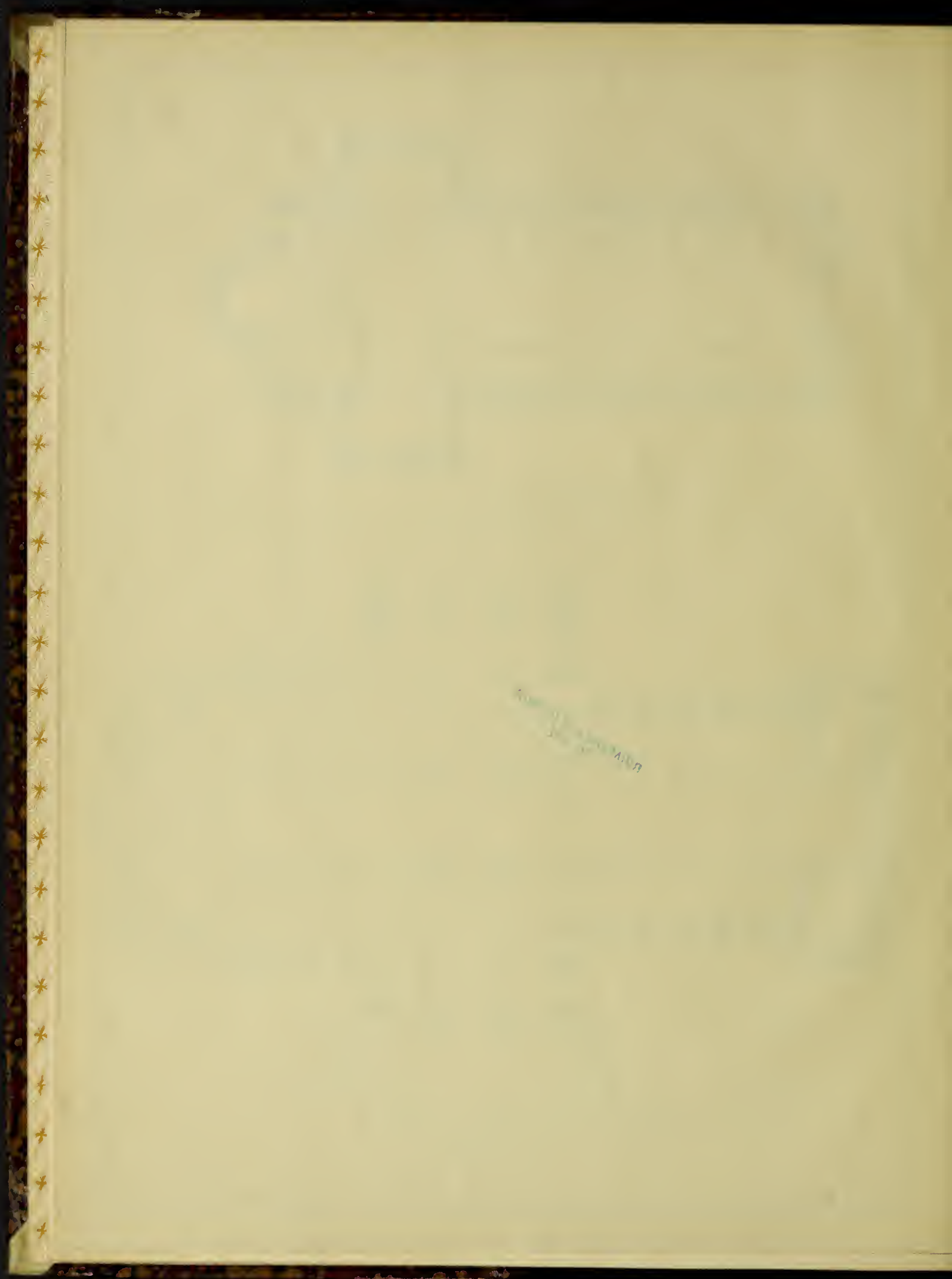
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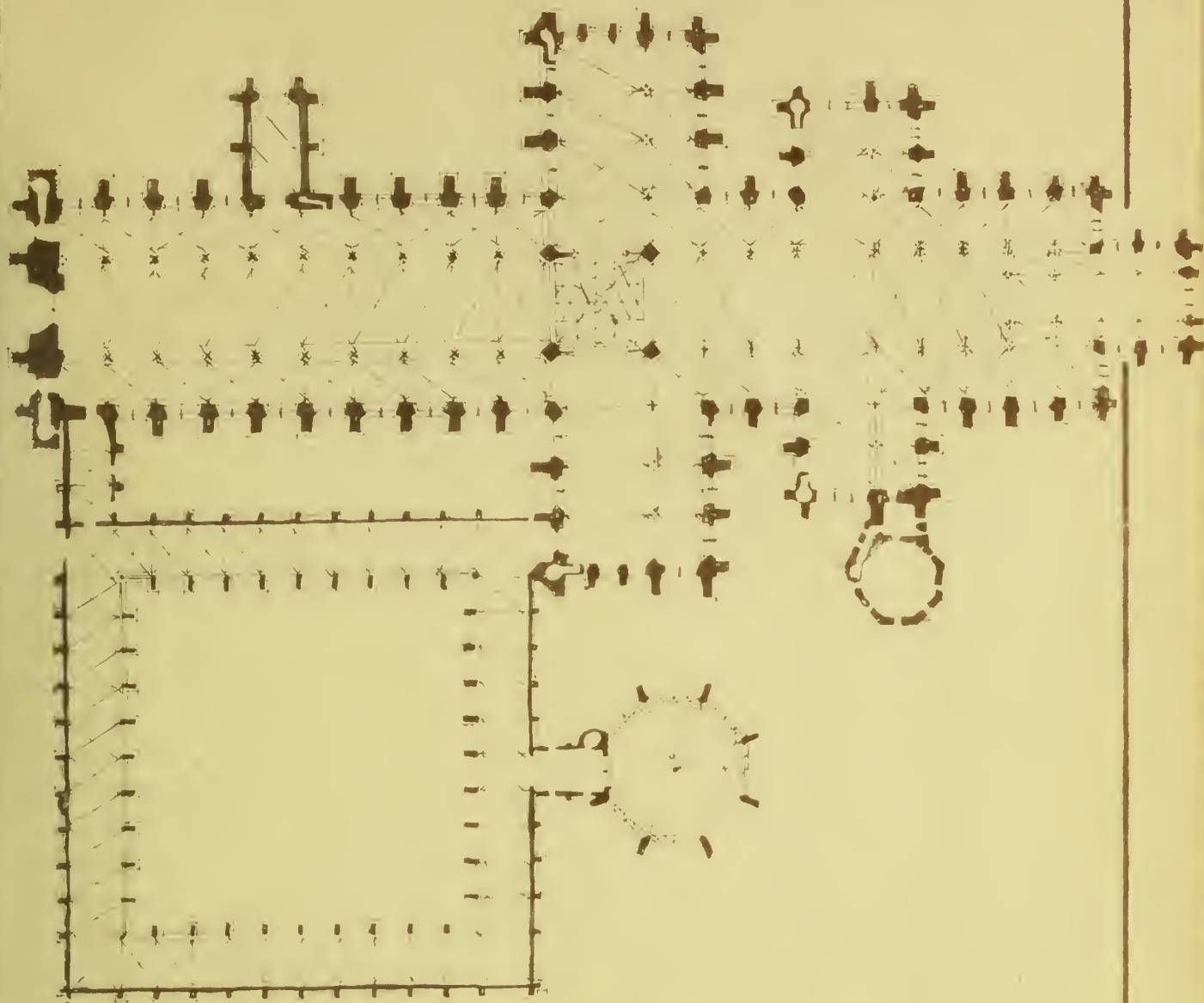


ST GEORGE DE BOCHERVILLE
TRANSEPTS & SIDE AISLES

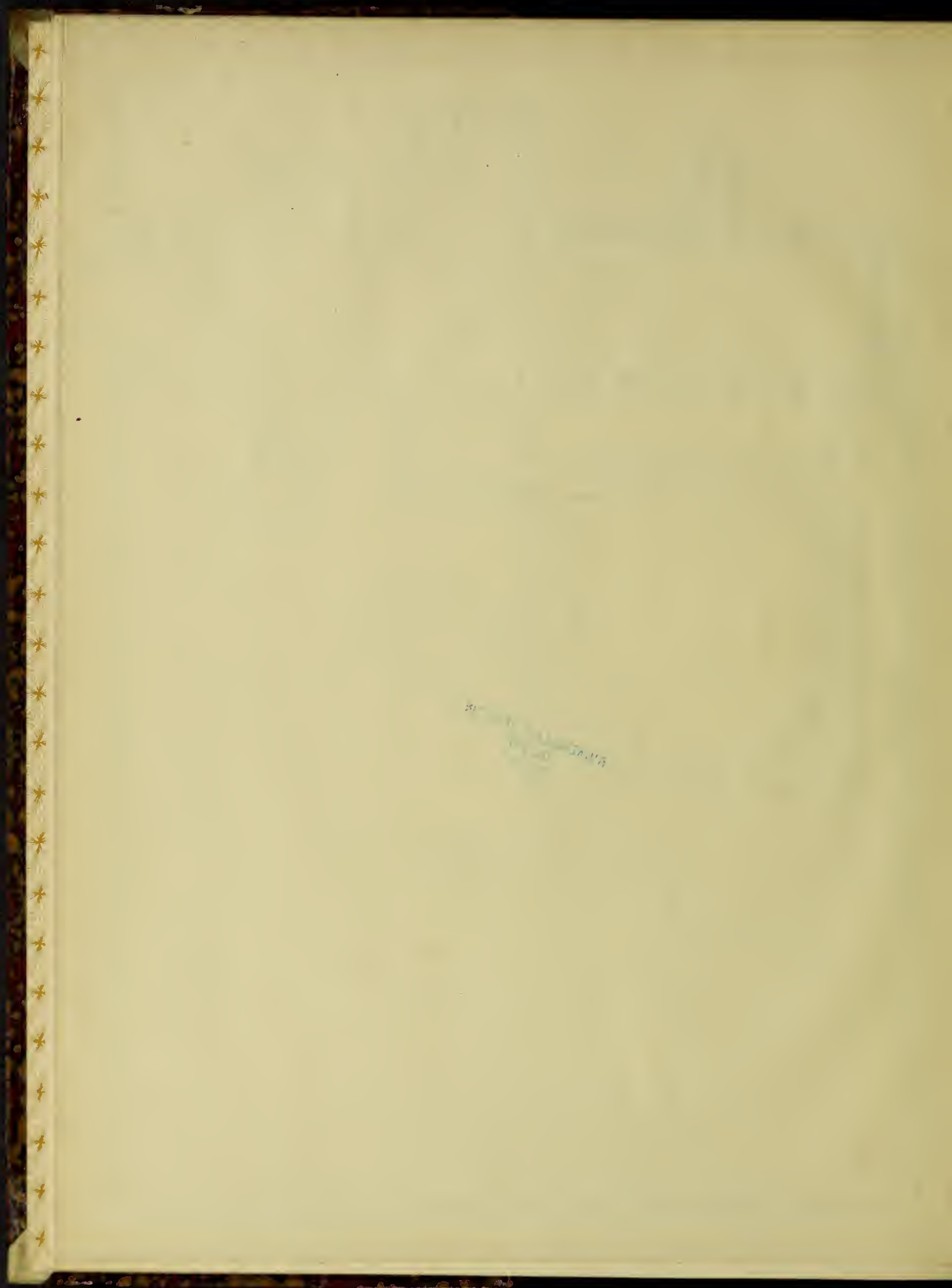


FULLY DEVELOPED FRENCH
CHARTRES





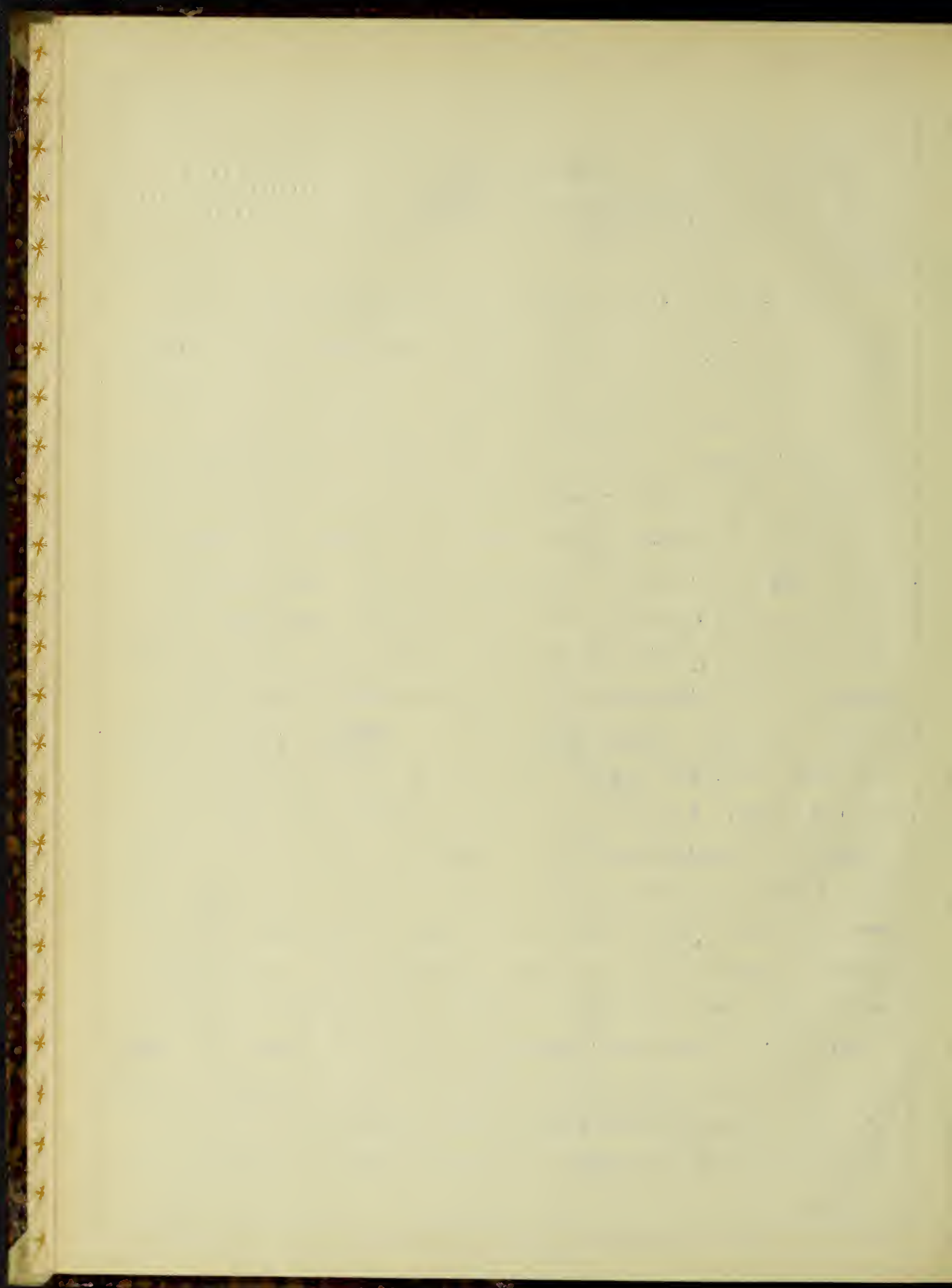
FULL DEVELOPED ENGLISH
SALISBURY CATHEDRAL



Thesis Subject.

An Episcopal Cathedral.

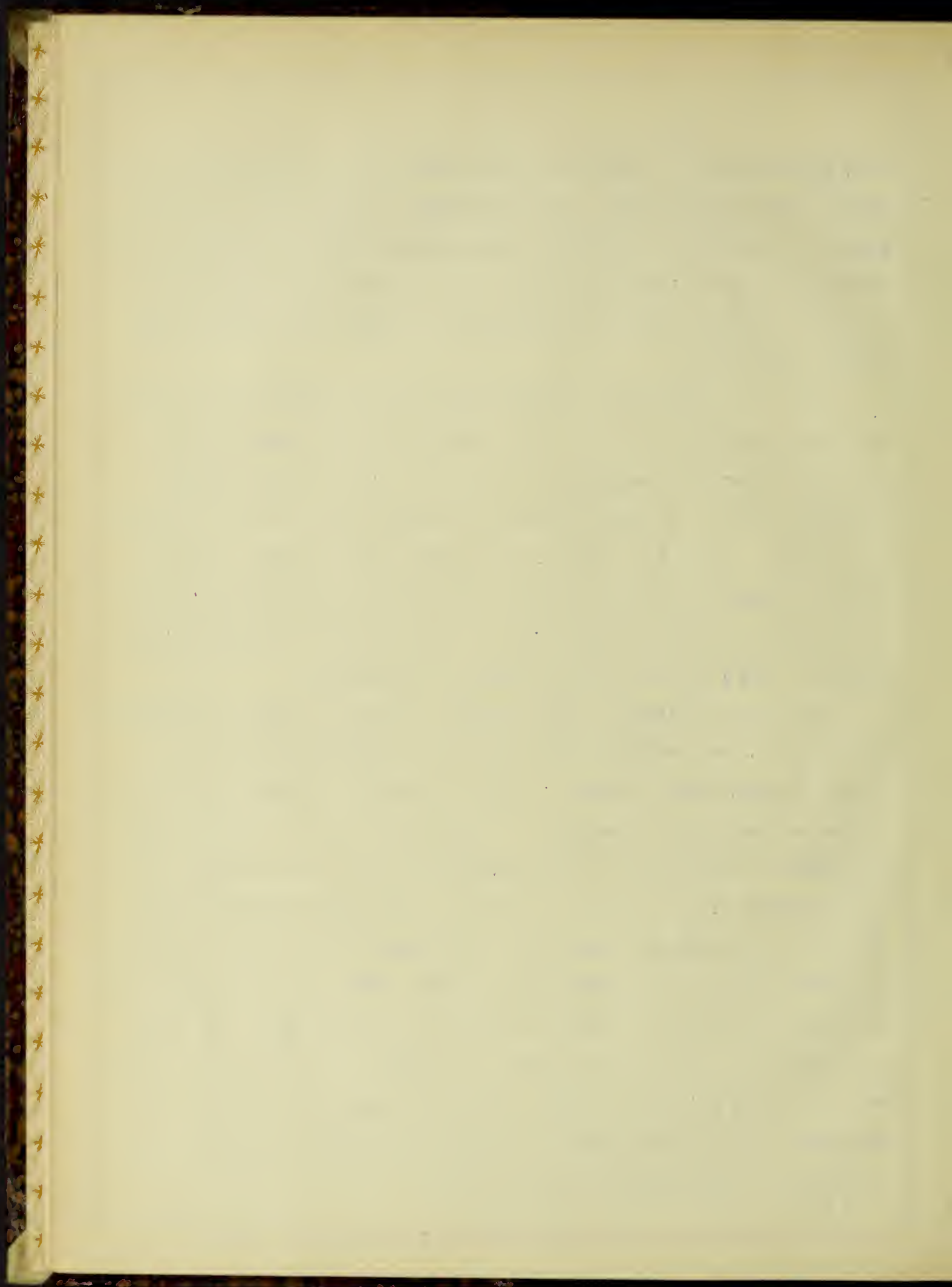
The cathedral is the center of the church and just as the altar is the center of the individual church where all the powers are concentrated into visible dignity. As the place of the cathedral of the bishops it requires a dignity greater than that of the parish church. It is not only the church of the bishops but of every person in his diocese. Structurally the cathedral should be the work of generations and not of an instant, in order that it may typify the majesty and dominion of God. A parish church of great size and splendor does not fulfill the requirement of the cathedral, unless it is architecturally on cathedral lines, becomes glorious thru benefactions and the center of the whole diocese, the parish church cannot become a cathedral. A study of the mediaeval cathedrals reveals the fact that the old builders built with the ideal of the glory and majesty of God rather than any thought of the architecture of the building. The cathedral of the middle ages is distinct from the parish church in design, no matter how large and gorgeous those may have been the cathedral was a special structure and as such was conceived. It was during the middle ages that the cathedral received its fullest development and the great structures are mostly in the Gothic style. The Roman basilicas were prevented by conditions from expressing the growing idea and the Romanesque was equally handicapped. St. Peter's and St. Paul's do not carry with them the cathedral idea and feel-



ing, but rather it is found in those structures at Chartres, Eville Durham, York and Lincoln. The Renaissance edifices are but affectations and many of the smaller cathedrals are only so because of the bishops, the real cathedrals with their solemn and cavernous interiors must forever remain the edifices of dignity that glorify the church triumphant.

The resurrection of the church in England after the Civil Wars was administrative and it is only natural that this idea should have been carried to America. It was then only a parish church selected from the diocese and made a cathedral only by the addition of a throne. This idea was only temporary and now that the Cathedral of Albany has been projected and begun on ancient lines there is no excuse for failure to carry out the old idea. One may criticise the style of Albany but no one can the motive.

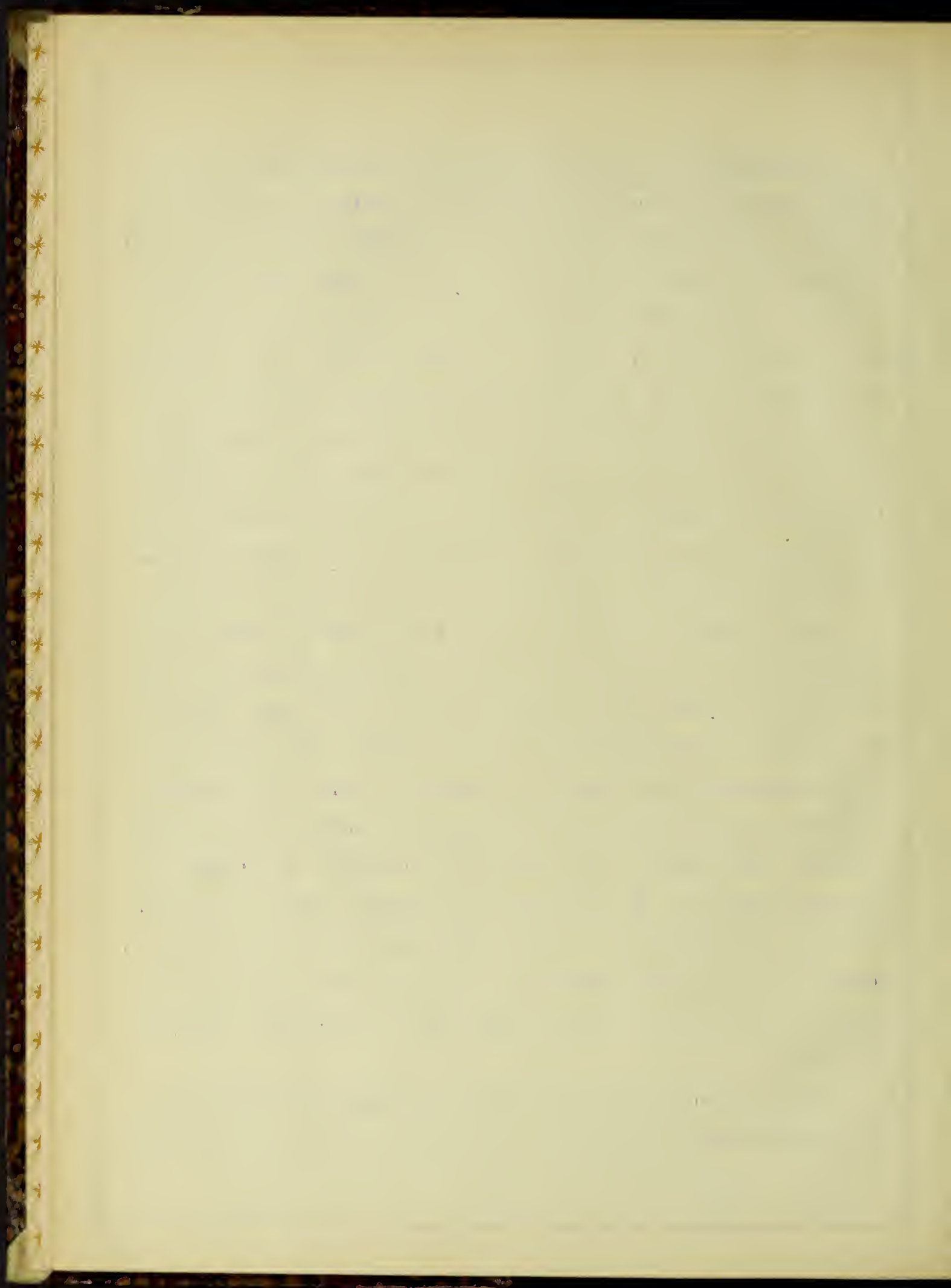
In first considering the cathedral problem it must be remembered that it is an edifice to be erected for eternity, not for a single congregation but for an entire diocese, and must be planned not to be complete at once but so that only such as is needed may be built and used until the next generation may add something, for "To be complete is to die." To build a temporary structure which is to be abandoned and then built else where is to forsake the whole cathedral idea of the everlasting church. When it becomes desirable to build a cathedral, lay out the plan on a grand scale and then only build such part as the money will permit and finish that up to the point where it can be used. There is more glory to God in the stunted walls at Albany and the monstrous masonry at New York than in the cast iron columns of Garden City.



A cathedral is not even secondarily an auditorium as is the parish church and we can not compromise it without a sacrifice of dignity. If we follow the styles of the middle ages we shall have good acoustics and that is all we ask, for to sacrifice the great columns and side aisles so that all seats should have a clear view of the pulpit would be foolish in the extreme and ruin the mystery, the sublimity and awe of the shadow and silence that must exist in a cathedral. Some questions of practicability must be sacrificed but who would not for the good of the structure, for a cathedral can not be considered as a structure of necessity and convenience. The cathedral must be untainted by materialism and commercialism. It is purely ideal and must stand to the enduring glory of God.

As the types of the past are the guides for the contemporary cathedral, let us take up a few of the ancient triumphants. There are two great types of the Gothic Cathedral, the French and English. All others are but modifications of the French. The French may well be placed ahead of the English in sublimity, unity and grandeur, in power and the working out of the great christian style of architecture. The English will lead in upon tenacity, sincerity and personal devotion. The cathedrals of Chartres, Amiens and Rheims give one a feeling as if they too were proud and self-conscious along with their awful grandeur. They typify the majesty of God rather than the loving kindness expressed in Winchester, Lincoln and Wells.

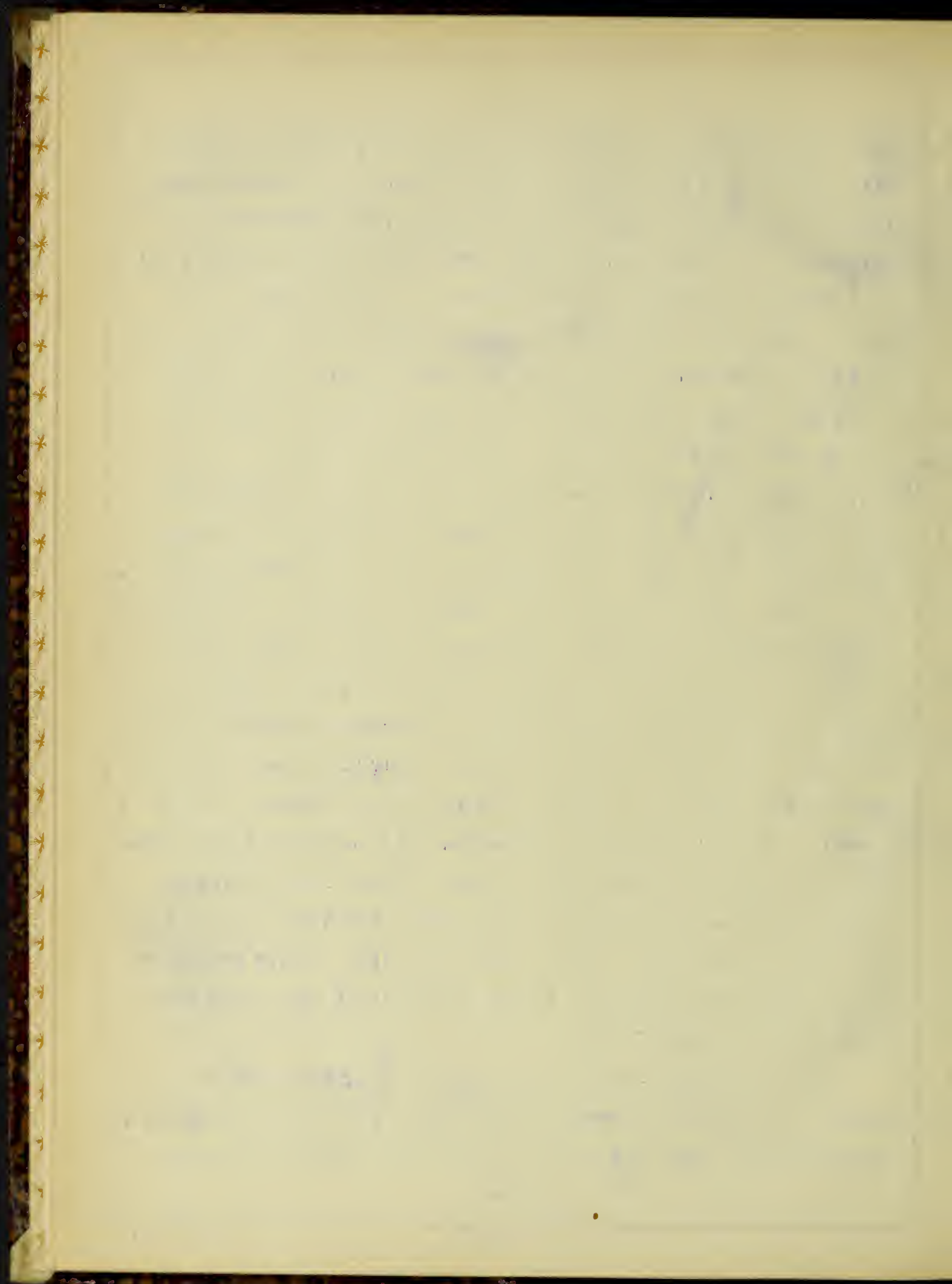
From an architectural standpoint the French cathedrals are more perfect than the English. In England there is not the feeling



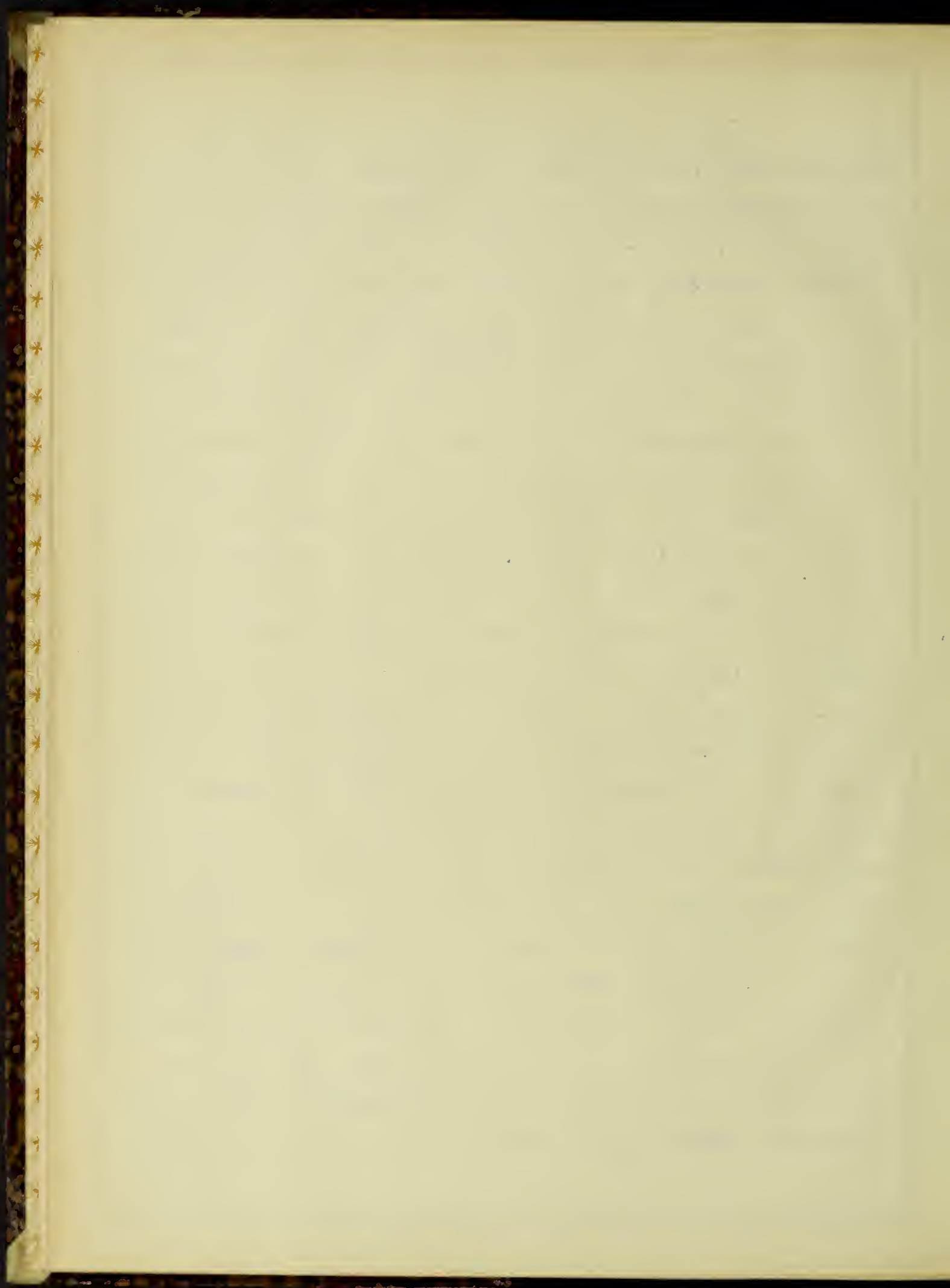
for pride that is to be found in the French perfection. The English edifices did not reach the dizzy heights of the French whose vaulting is lighter, they did not understand the disposition of columns, how to lay out the aisles and chapels, nor how to get the best effects of shadow and perspective from their arches. The French cathedrals always show a unity of design but the English is without architectural consistency and each building tells of the march of history. The English have a personality in their work that is precious and the French have achieved an ideal.

In the French the component parts are of the simplest. The roset is composed of the nave and transepts crossing and forming a Latin cross. Out side of this cornice and aisles surrounding the main fabric, and at the east end a further sequence of polygonal chapels forming the chavet. Occasionally these chapels are continued down each side of the nave and now and then, as in Cologne, the line of subsidiary chapels becomes a perfect aisle, the extreme contour of the plan is perfectly simple, symmetrical and unbroken. Their entire fabric is vaulted in stone, and the thrust of these vaults is received by flying buttresses made necessary by the fact that the system of construction, which is that of concentrated loads renders solid buttresses impossible. The height of the center nave is from three to four times its width. Viewed simply as an architectural product the French cathedral is seen to be the most marvelous work of man.

But the French is not for us, we are the descendants of the English for we are one people, one history, one blood and one architecture. "The English plan is the germ of greater things



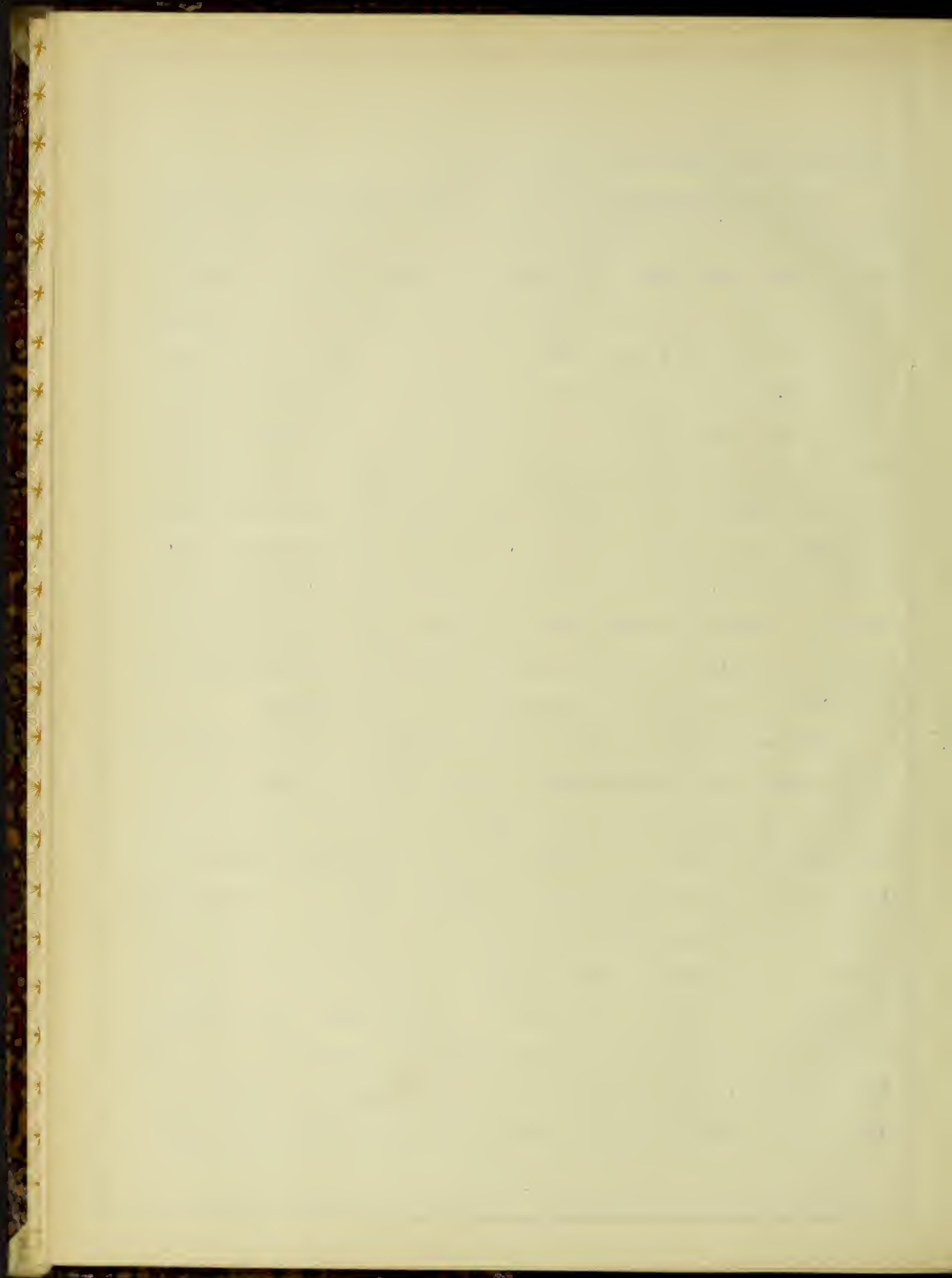
than have been wrought in France." The central tower of the English cathedral is dominant and full of great possibilities, the square east end and the features impossible in the French chancel, the secondary transept gives forth great possibilities, the multiplication of chapels, chantries, chapter house and other buildings of the group hold out great possibilities. Fan vaulting is peculiarly English. The central tower has proved a problem on the interior that has never been well solved. The Gothic in England was arrested just when it seemed about to bloom into its full growth and it is for us now to take up and carry on the question. In America now the cathedral presents itself to the architect as the problem of a new land in which the oldest foundations are not a century old. The cathedral at Albany has been conceived on the right lines but rather thru the incentive of one man than to a general feeling thruout the church. The competition for the New York cathedral varied from the coldly mechanical, thru the unintelligent, to the fantastically impossible and this extreme in America has been the same as was found in England. The only two modern cathedrals in England are Truro and Belfast but both, which having the cathedral idea, are archaeological and coldly dead. Albany is the only edifice in America that approaches the cathedral idea, all others being merely large parish churches with the addition of a throne. The cathedral at Cleveland has been conceived on the true cathedral idea but spoiled by small scale. No one came forth to take advantage of the chance offered at New York and Washington. Garden City was carried out with no regard for archi-



tectural or ecclesiastical principals.

What is the correct solution? First, qualities of grandeur and sublimity by the giving of the best that we have in art and labor, those that enter the portals must be crushed with awe and again raised to spiritual exaltation. The work must be designed so that it will best adapt itself to the most solemn ritual and imposing services, the choir and sanctuary must be vast and spacious, the aisles clear for processions, and there must be numerous sacristies. The space for worship must be great, there must be many small chapels and chantries and spaces for tombs and tablets. The best that we can do is not too good. Of the qualities that are no longer needed, they are few and are principally administrative, the monastic orders have disappeared, the resident canons are usually lacking. As a result of this the choir and sanctuary need not be as large but the chapel must be a little larger.

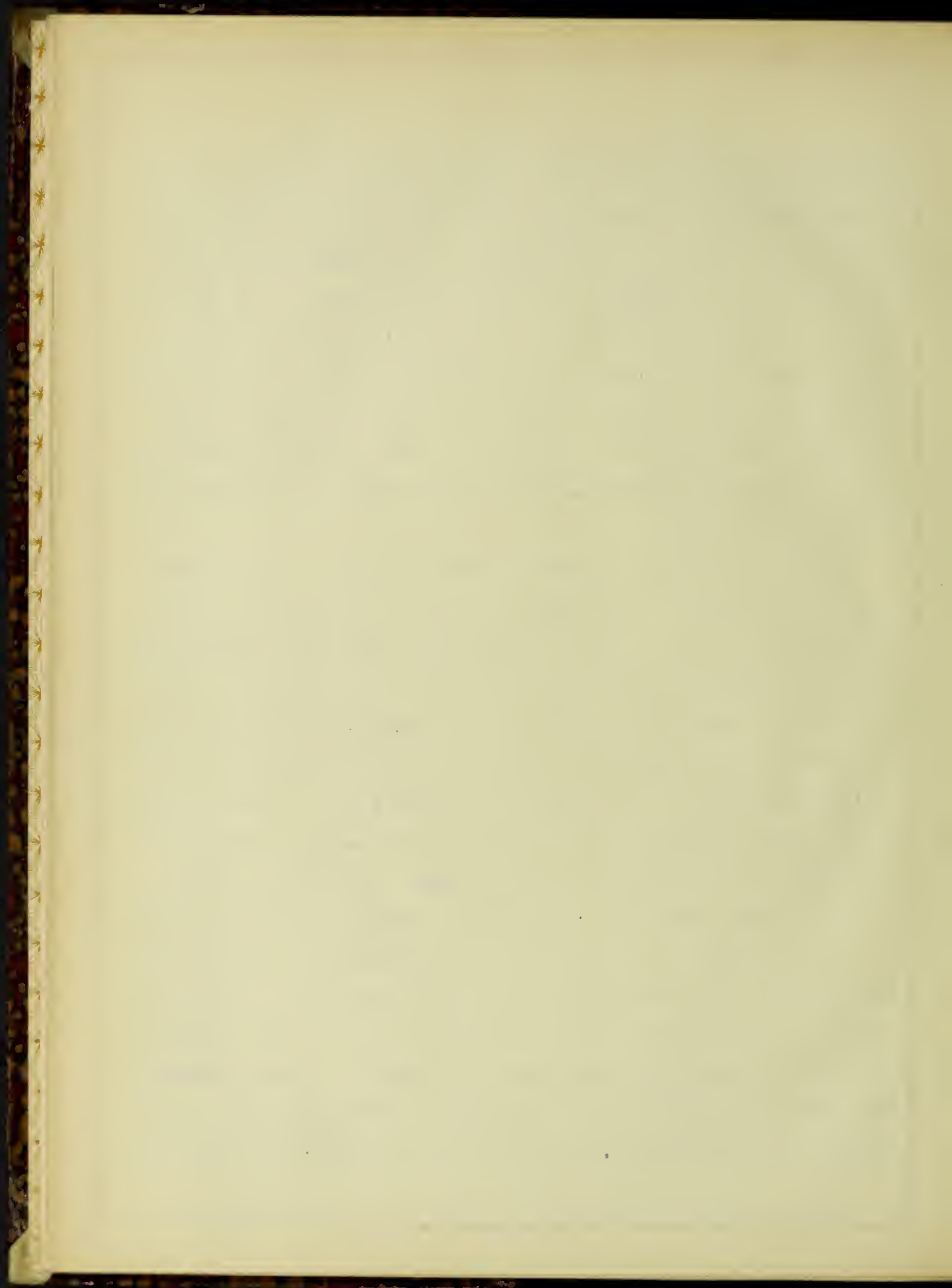
The west portals, usually three in number, enter directly with the narthex which always extends across the entire width of the nave and in a great many of the English cathedrals which may be considered as typical the narthex is found extending across the aisles also. The Narthex may be built in between the two western towers as at York, Litchfield, Bristol and Salisbury, but in some examples the towers lie quite behind the narthex which then becomes more of a porch than a part of the building. These western porches are in most cases the most beautiful portion of the whole building and on them is lavished the best material, workmanship and themes. Often the whole story of the Bible will be portrayed



upon them in sculptural relief. Passing into the narthex we find a beautifully vaulted ceiling. To the north and south are the towers that either form the entrances to the side aisles or in many cases small chapels. The north tower in some of the old examples, and also a great many of the modern, is given over to a calvary and mortuary chapel. The south tower, in the old examples, was usually used to place a tomb in and often there was a south entrance porch which it is customary to call a Galilee Porch, but this is erroneous as the Galilee Porch is really the entrance through the south transepts.

Directly behind the narthex extends the nave of the church. This is the body and in the English examples is long and low as compared with those of the continent whose additional height gives them the appearance of being shorter than they really are. This nave usually has a vaulted ceiling many examples of which are very beautiful, Exeter, Hereford, Ripon and Litchfield being the best. The stone vaulting of the ceiling is protected by a wooden roof in most of the old examples but in modern work steel and slate have replaced the oak timbers and lead plates of the mediæval days.

The side aisles which structurally separate from the nave are so closely linked to it that they have always seemed a part of the nave itself. The aisles are low, only extending through one story in order to get the clear story for lighting the nave. They extend the entire length of the nave and in many examples around the entire transepts and continuing down the sides of the chancel as an ambulatory. At Chichester and Bristol a line of chapels is found still

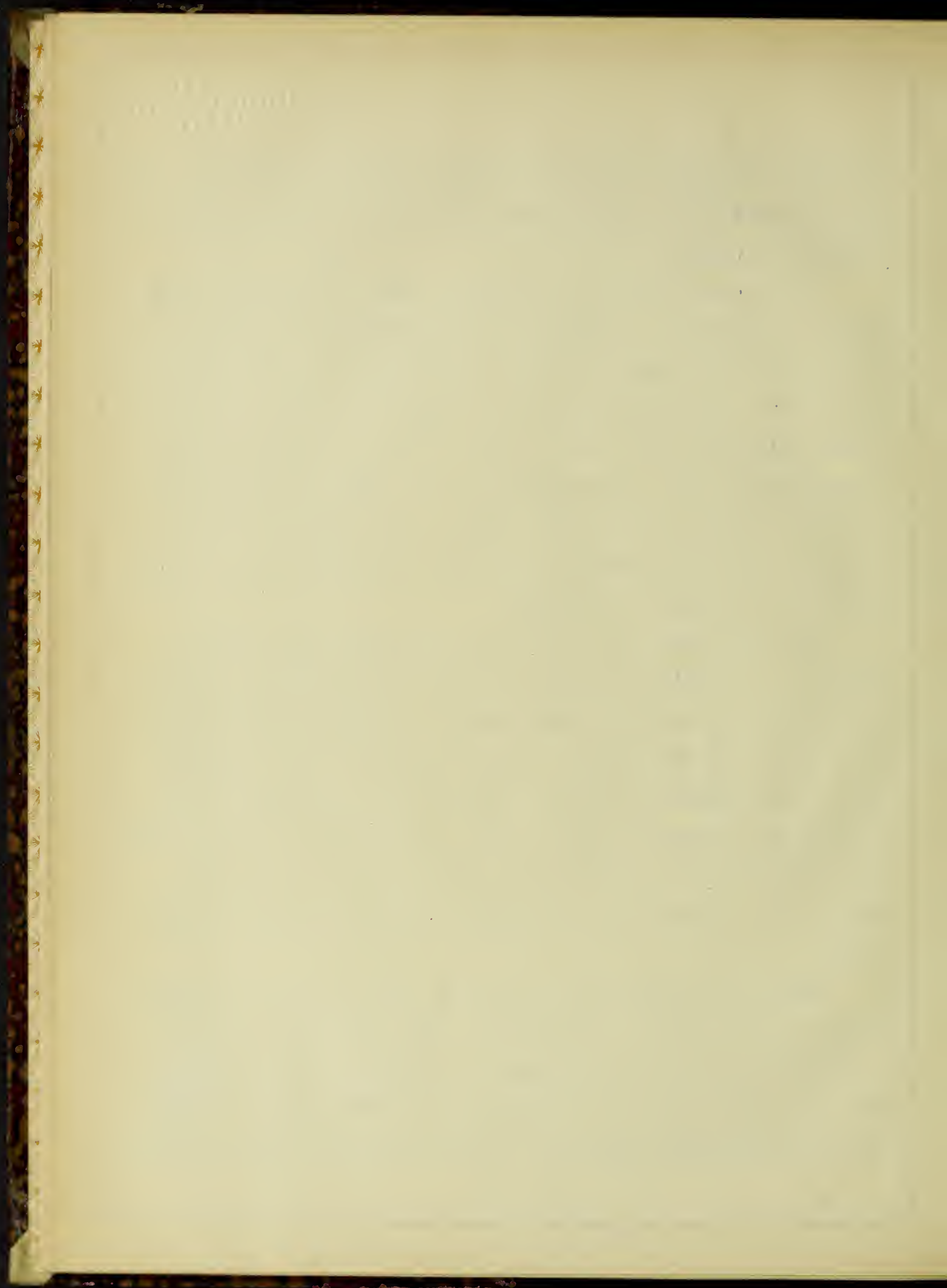


out side of the side aisles and used as chantries and tombs. This is a noble idea and should be conceived and carried out with the cathedral structure.

At the eastern end of the nave is found the crossing of the nave and transepts. The English always carried the crossing with a noble tower that raised above and predominated the entire building. This central tower was carried down thru the church or great clustered columns standing upon the line of the nave columns and extending beyond them. The vaulting of the tower was usually made a special feature and the dome formed by the vault is termed the lantern. Beautiful examples of central tower vaulting may be seen at Exeter, Lichfield and Bristol.

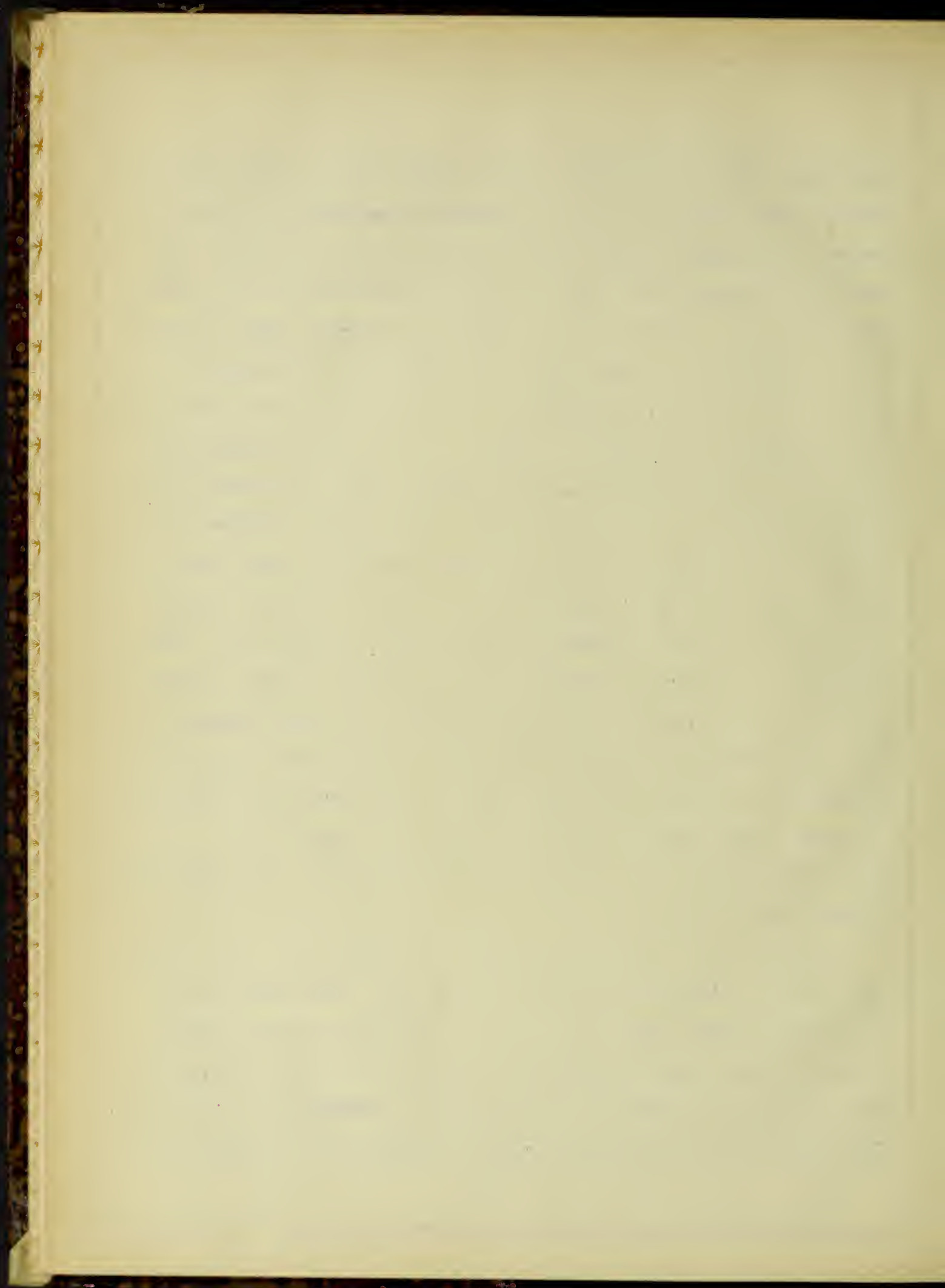
Extending north and south from the central tower are the transepts. In modern examples they are usually used for seating the same as the nave. In the mediaeval cathedrals the transepts were used mostly for chapels, tombs, chantries, etc. Entrances thru the transepts are usually provided, the south entrance usually being termed the Galilee Porch or entrance. In many of the old cathedrals the cloister starts from the transept and this seems to be the best and most logical place from which to start them.

Beyond the crossing of the central tower we enter the choir. In all the old examples of England a heavy wood screen is built across the western end of the choir and nearly shutting it out from view from the nave. In more modern work, however, this is not considered good practice, it being preferred to leave the view



open clear thru to the altar. In the choir are the seats for the choir, often large in the great cathedrals and made up of male voices. When an auxiliary choir of female voices is wanted they are usually placed in a gallery over the ambulatory or the secondary transepts. Then we enter the choir or chancel which includes also the sanctuary we come into the active part of the church. Here are the bishops, the clergy, the choir and all the living parts of the ritual. The pulpit is reached from the choir being raised about seven steps above the chancel floor, which is in turn three steps above that of the church floor. Now we must consider a location for the organ. In the mediaeval structures there were no organs and no provision need be made for them but in the modern structure the organ is essential and must be provided for. With pneumatic or electric control, as used on modern organs, the disposition of the pipes becomes much simpler. The usual method is to divide the pipes and place them over the first two bays of the ambulatory on both sides of the chancel, the keyboard is placed in the choir and usually on the north side. The pulpit and altar are found at the western end of the chancel on the north and south sides respectively.

Passing on to the east we come to the altar rail which marks the division of the choir and the sanctuary. When great height is wanted for the altar and it is not desirable to have a great number of steps immediately at the altar, two or three steps may be placed in the chancel floor just before reaching the altar rail. The altar is the church and there is centered all the interest of

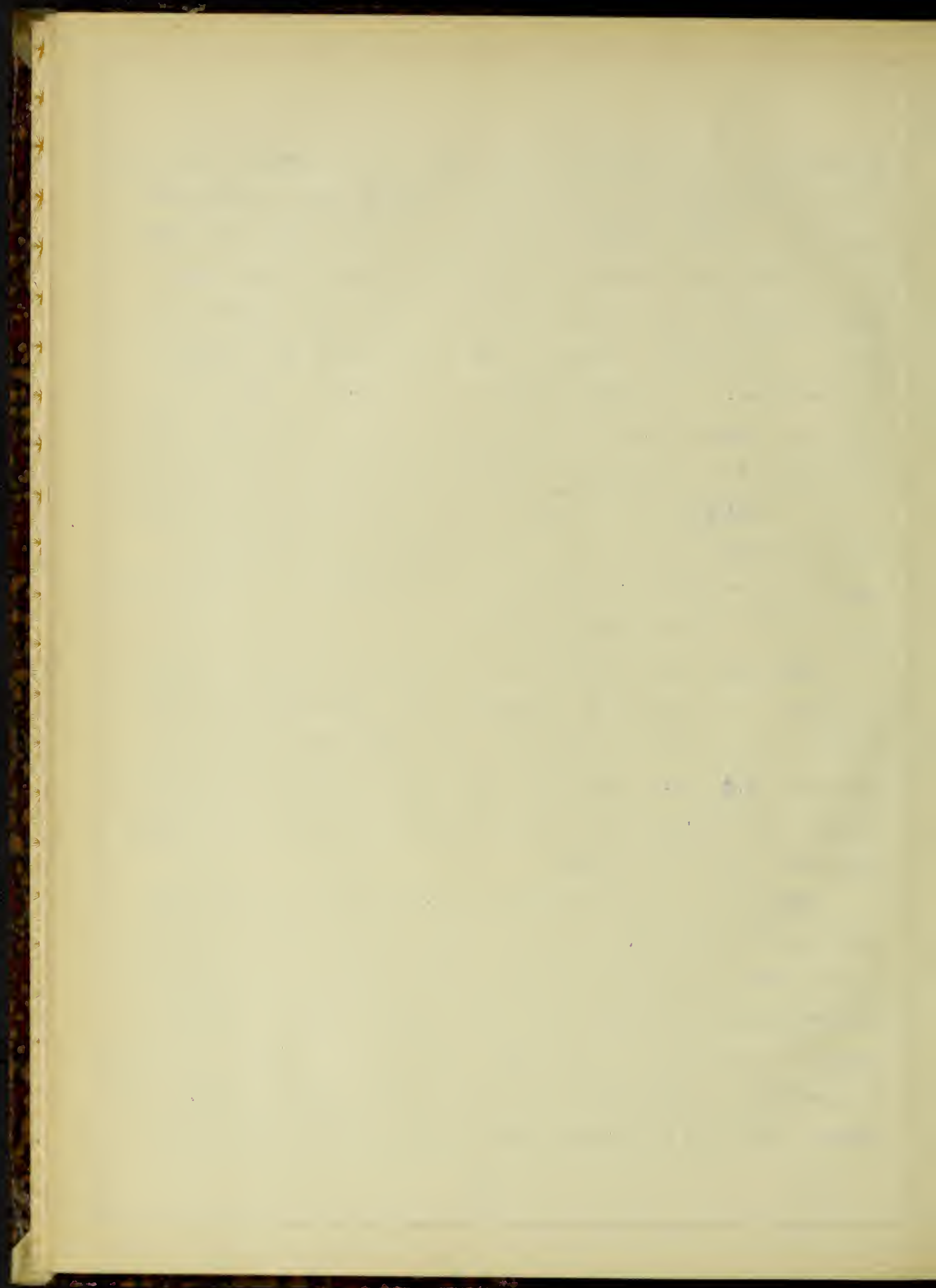


the service. All perspective lines lead to the altar and the focus of the vision must be at the altar in order to give it its proper importance. Sedilia must be provided in the sanctuary for clergy and a working space about the altar at least great enough for three members of the clergy at one time. The altar itself is no part of the structure proper and may or may not be very elaborate and beautiful. The reredos, however, is an immediate part of the building itself and must be designed as a part of the same. There is a chance for the designer to lavish his best skill for while the

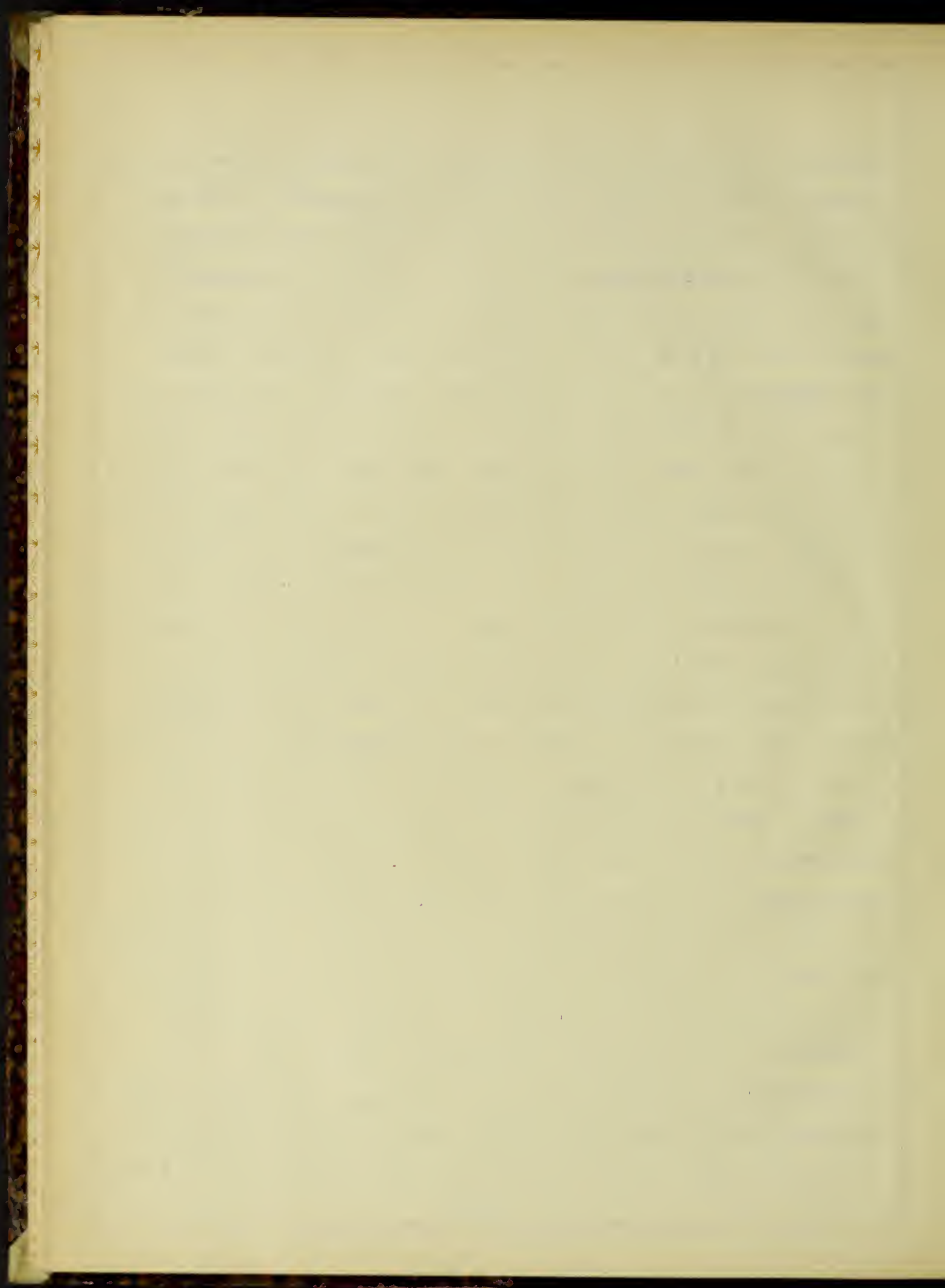
_____ must be rich in detail and sculpture, finest in workmanship and design of any part of the building, It must hold its dignity and steadfastness of purpose and act only as a foil to the altar itself or its significance is lost.

Ambulatory. An ambulatory must be carried around the chancel in order that on occasions processions may pass clear around the chancel without really entering it. The ambulatory may well be the same width as the side aisles and in fact better lines of composition are obtained when this is the case in place of narrowing down the width of the church.

Sacristies. On either side of the ambulatory are found the various sacristies which should be ample for their purpose and in no way crowd or hamper the working of the church. Sacristies must be provided for the bishop, dean and clergy. These are preferably placed in a group and on the north side of the building. It should be possible to communicate one with the other without entering the church proper and each should have its own entrance into the am-

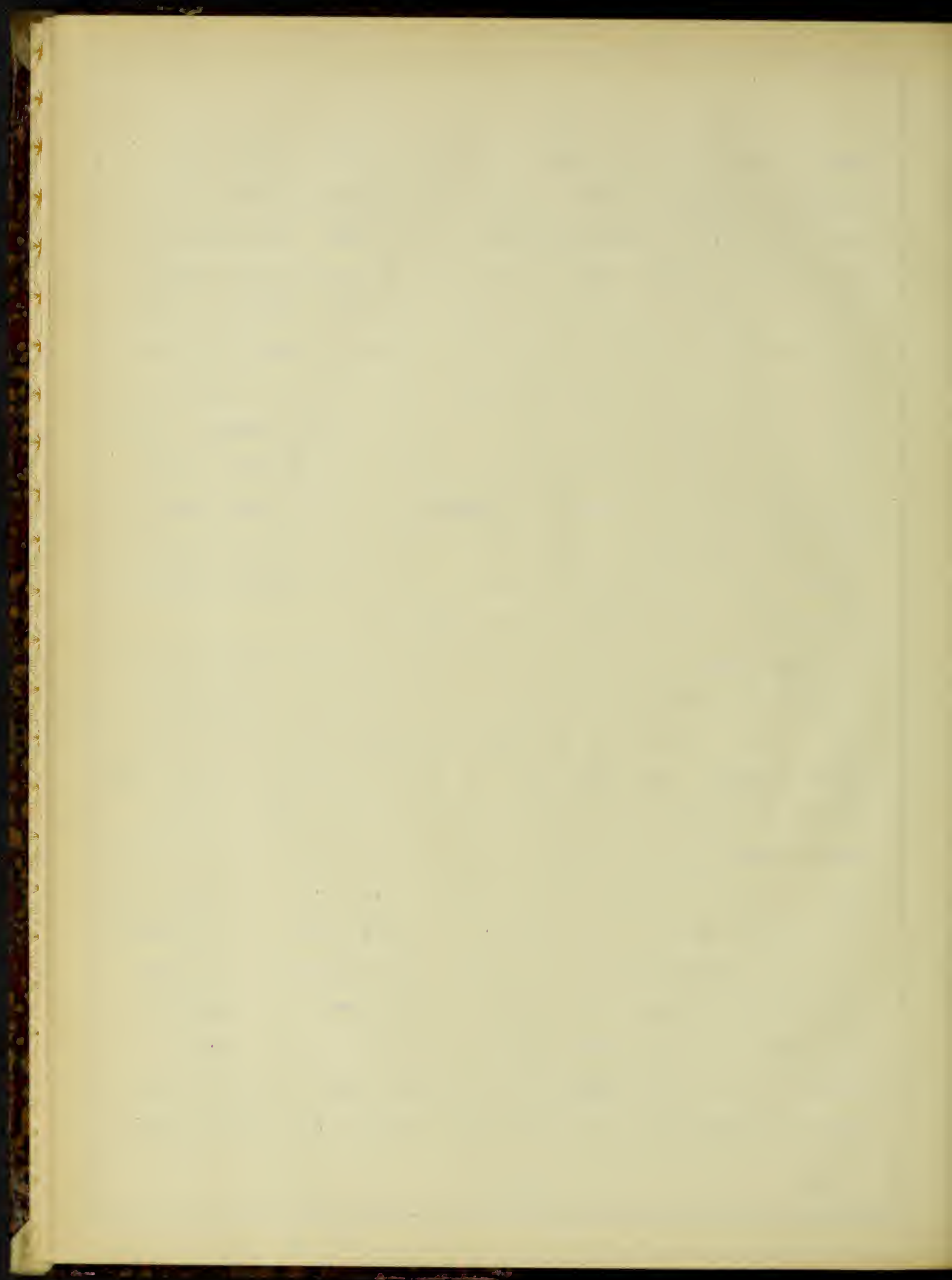


bulatory. The clergy and bishop's sacristies should connect by a cloister with the chapter house either thru separate or the same entrance. The dean's sacristy need not connect direct with the chapter house, it is desirable, however, to have an entrance to this sacristy from the great cloister in order that the dean may enter without going thru the entire building. Separate toilets must be provided in all the sacristies and ample closet space must be provided in the clergy sacristies to give hanging space for the surplices of a large body of clergy. The dean's sacristy must also be provided with a large and spacious closet. Closet space must be provided for in the bishop's sacristy but need not be as large as those of the choir and dean. The cloisters to the rectory and parish house should lead from the same side as the group of sacristies and connect with them. The chapter house in reality belongs to this group and is directly connected with them. On the opposite side of the structure the second group of sacristies is to be found which consists of those for the organist, choir and altar. The organist sacristy is used mostly as a storage room for music and as a robing room for the organist and attendants. Tools for the minor repairs to the organ are kept there and the control of all the organ machinery is centered in this sacristy. The choir sacristy should in reality be a counter part of that of the clergy, being a robing room for the members of the choir. More spacious closets and toilet room must be supplied, however, than for the clergy sacristy as there will in all cases be a much larger number in the choir than among the clergy. The altar sacristy is really the working space for the altar and requires closets for the taking



care of the more common altar dressings, a vault for the safe keeping of the costly altar robes, gold and silver plate and all the valuable and costly adornments of the altar. This sacristy must contain a small sink that the gold and silver plate used in communion services may be taken proper care of. These two groups include the most important sacristies and really there is no need for any more provided these mentioned have been made of sufficient size to allow their their work to be done in them properly. There should be a special entrance for the choir and organist so that they may reach their respective sacristies without going thru the cathedral proper nor the ambulatory. Stair ways must be provided on each side to the organ loft and for the female choir when they are placed in the gallery over the ambulatory.

Lady Chapel. In the English cathedral the lady chapel is usually found extending to the east of the sanctuary, but in the case of W., at least it is found extending to the east of the south transept. The lady chapel is where the smaller services are held and in reality is a complete little church where all the great ceremonies of the church may be held as well as in the cathedral itself. The most beautiful of all the work is usually found in the lady chapel. The examples of vaulting found in the chapels of York, Peterborough, Wells, Bristol and many others of the English cathedrals cannot be surpassed in any part of the edifices. The lady chapel must have a seating capacity equal to a small church, a pulpit and lectern are necessary but the choir is usually dispensed with. The sanctuary contains only the altar and

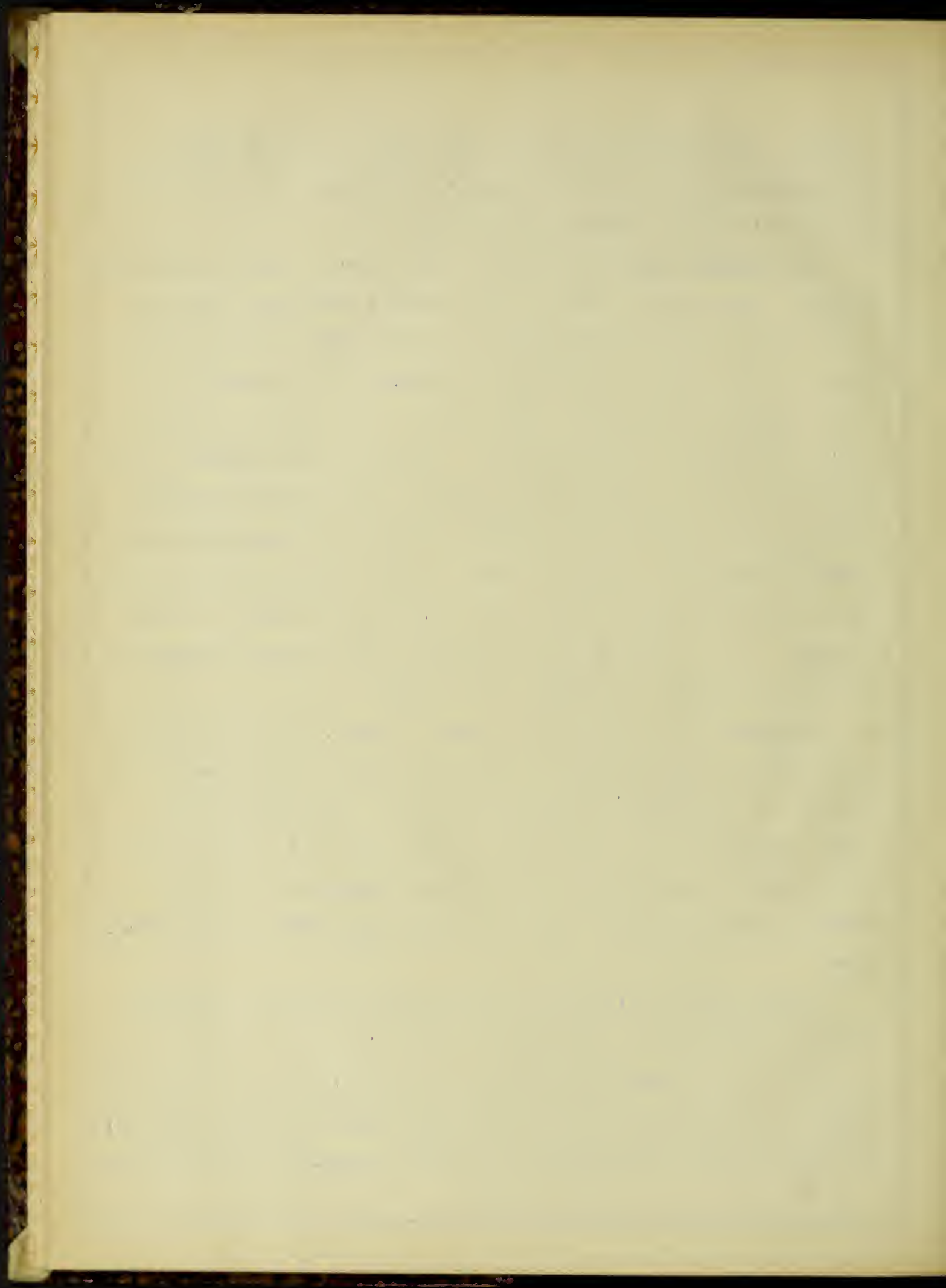


sedolia and need not be of any great size as the sanctuary of the cathedral but there must be ample working space for the minister and one or two members of the clergy.

The Chapter House. The chapter house alone we have not yet considered. The chapter house of the Mediaeval cathedral, which usually had an order of monks always in attendance, was the meeting place for the abbot or prior and the members of the monastery for the transaction of business. The chapter house usually opened out of the cloisters on the easternmost side as at Westminster. The most common plan in England was polygonal with a vaulted ceiling resting upon a central pier, Lincoln, Wells and Westminster being excellent examples. It was, however, often oblong as at Canterbury, Winchester and Chester. The chapter house should seat the entire monastery and a raised dais at the eastern side provide seats for the abbot and leading members of the clergy.

Cloisters. The cloisters surround the cloister yard giving it a seclusion of its own and also affords a place of exercise for members of the clergy in inclement weather. There should be a great cloister which is the common ground of all the clergy and a small cloister, opening from the bishop's sacristy and cut off from the great cloister, where the bishop may secure privacy at any time.

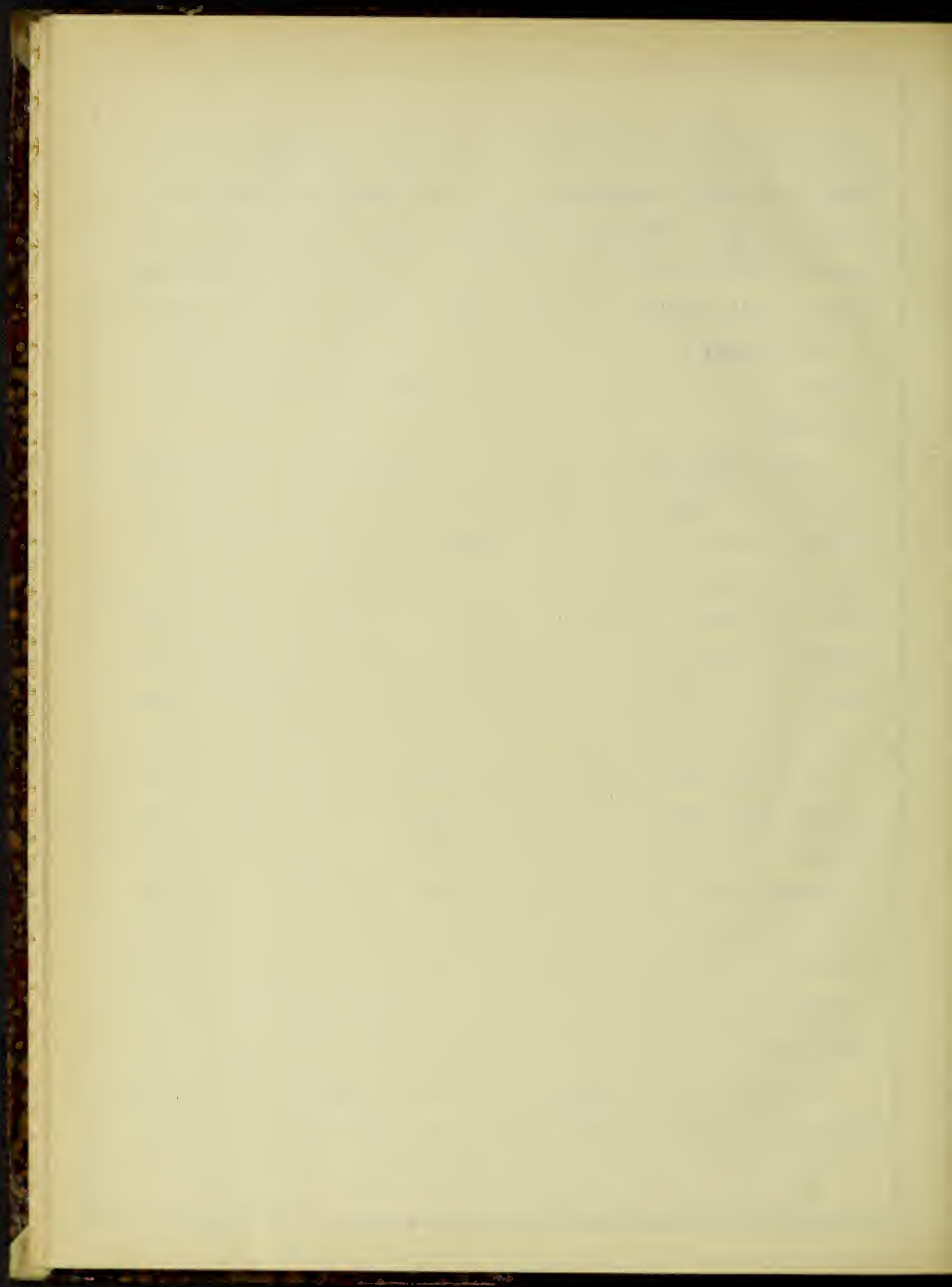
England being isolated on an island very naturally developed her own architecture, but the same reason also gave rise to an incurable habit of travel which led to the importation of continental ideas in architecture, as well as other things, without destroying the personality of the English. The deep porches and small entran-



ces of the English cathedrals are the direct influence of the climatic conditions necessitated by the cold and high winds of the English winters. English architecture from the departure of the Romans is usually divided into the following periods; Anglo-Saxon, Norman, Early English, Decorated, Perpendicular and Tudor. But none of these styles can be used pure to-day and we must proportion our modern design to the medieval and to modern requirements at the same time.

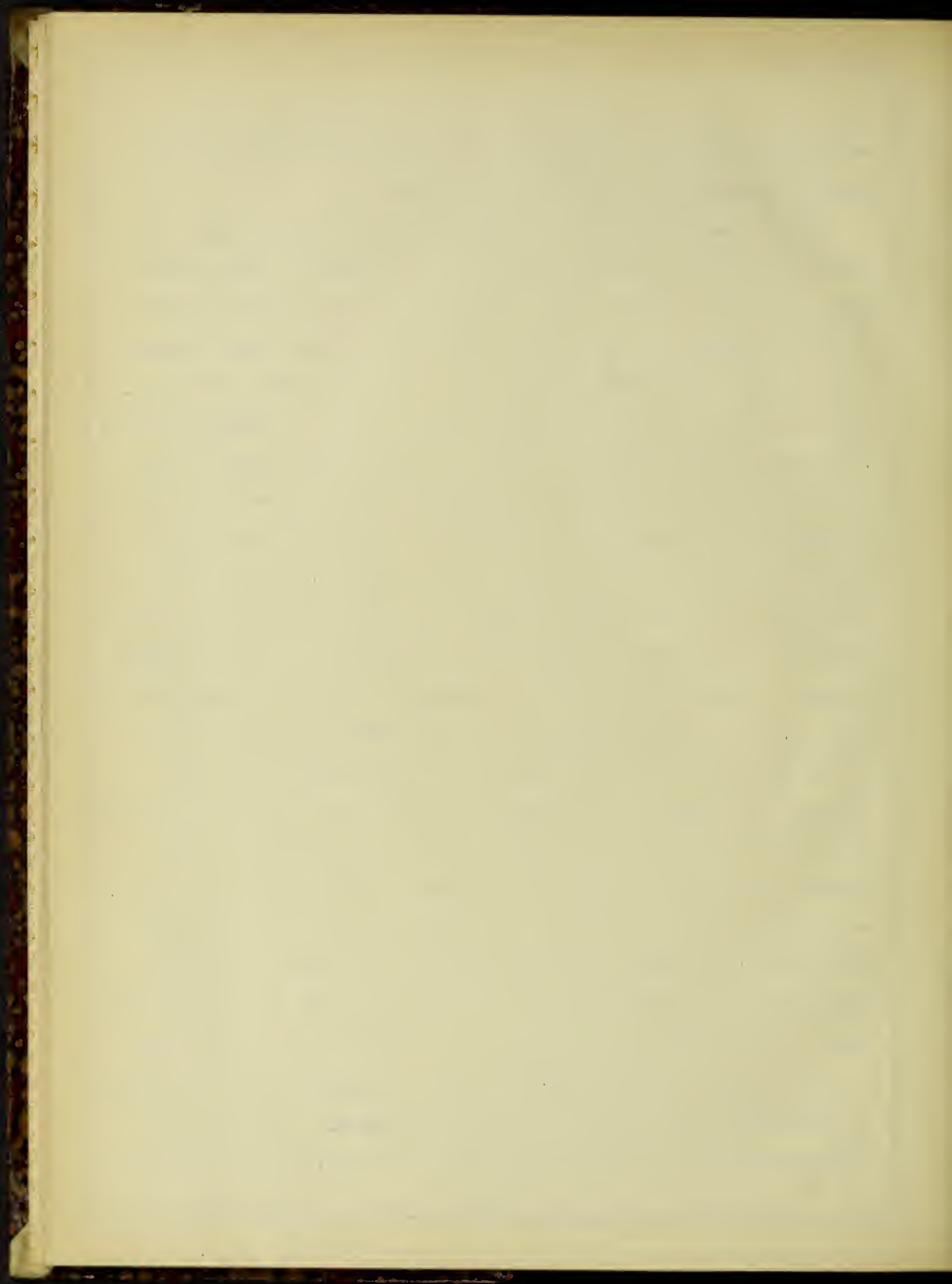
Modern Cathedrals. Let us look at some of our modern cathedral buildings and especially those of America. The cathedral of Albany was the first American cathedral to be conceived on the lines that at all represented the dignity, grace and sublimity that should be found in a cathedral building. The competition for the cathedral of New York showed how ignorant were the American architects of the true cathedral idea and we find the drawings extending from a mechanical copy, cold and dry, thru the unintelligent, to the impossible. The first two designs for the proposed Washington cathedral were equally as bad, the first being Roman Romanesque and the second archaeological French Gothic. Garden City cathedral is nothing less than an abortion and example of every thing that should be avoided in design and construction. The cathedral of Cleveland is worthy of the cathedral idea but has the fatal defect of small scale. The design would be admirable if the building were only larger in order that it might carry the proper dignity with it.

What must be the design of the modern cathedral? The structure must carry with it grandeur and sublimity and those qualities of



self sacrifice, which characterize the best that we have in us in art and labor for the glorification of God.

Let us scan the western elevation and see what we find. Two western towers in nearly all examples of mediaeval, Exeter alone being completely without them. The spire is not seen in England, Litchfield being the only example that have the full three spires, while Worcester and Salisbury have spires on the central towers only. None of the other English cathedrals have spires. Sheltered between the western towers lies the porch of the narthex and back of this in the plane of the west wall of the nave the great western window. The porch of the narthex is the example of the best workmanship in the whole edifice and here may be found a skill of design and execution that make the modern designer and stone cutter stand in awe of what his predecessors had done. The front of all the cathedrals are not, however, in two planes, Salisbury, Lincoln and Litchfield being one continuous plane for the whole front, the great window of the nave rising over the arches of the entrances. The rose window is not found in the English cathedrals as in France the principal feature of the western elevation and we must admit a very beautiful one too. But the great windows of the English are not to be transposed with the lines of the tracery, cragion, the vertical lines that are found thruout the building and there is no clash between them and the circles of the Rose window as is so often the case. A gable between the two towers and seeming as if supported by them, crowns the wall above the great window and shows the lines of the sloping roof which lie behind the parapet. This gable is seldom masked by a parquette wall as is often the case in French



work but stands out boldly and in no way belies the construction as does the French. The cloister may extend either to the north or south of the church but is usually so low in comparison with the cathedral that there is no feeling of the buildings being over-balanced.

The side elevation presents to us the full view of the cathedral, the sides of the aisles presenting their low walls and windows with the clear story rising above them cut into bays by the buttresses and pinnacles. Farther to the east is seen the extension of the transepts, usually with a gable roof with heavy pinnacles to hold it down at the corners. In this elevation too we get our first good view of the central tower which is the crown of the English cathedral and the feature that pulls the entire design together. Farther to the east is seen the secondary transepts if they exist, also crowned with the gable roof revealing the line of the real roof. Still to the east are seen the more broken lines that indicate the sacristies' entrances for the choir and clergy and others. The lines of the chapel at the extreme east of the structure are, however, more beautiful and in many ways the most refined portion of the entire structure. The square east end of the cathedral give opportunity of a grand and beautiful east window that in many ways surpasses the French chancel.

In all, the cathedral must be dignified and impressive in order that those who come under its shadow will feel the awe and majesty of this monument to God.





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